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Original Articles.

SOME COMMON ERRORS IN THE TREATMENT OF PULMONARY TUBERCULOSIS.*

NORMAN BRIDGE, M.D.

LOS ANGELES, CAL.

Few subjects in all medicine have received such thorough study in our time as tuberculosis. Current methods in the treatment of its pulmonary form average better than those of old. Results show this fact. The tuberculosis mortality has been reduced in less than three decades by probably 29 per cent. of the former figure, or from 14.25 to 10 per cent. of all deaths. These results are not accidental, but are clearly due more to the better management of the pulmonary form than to any other influence.

The disease is still one of the most appalling of the list. It attacks probably half of all the people at some time in their lives, and it destroys a tenth of them finally, and it deserves the best thought of all physicians.

If the best methods of treatment now are better than those of the last century, we should logically all adopt them. But it is difficult for us all to move with the advance of the general consensus, and we shall probably never wholly agree as to what is, in all particulars, the best treatment. Notwithstanding these drawbacks, we ought to be more united than we are, and I am sure no word can be unwelcome that can help, even a little, to bring us together, and to the best basis.

This paper offers no fresh discoveries, but is rather an attempt, mainly through an invitation to a mutual confession of our common errors, to indicate the best course for to-day.

Men grow fixed in their ideas; they come to regard their notions as among the immutable axioms, and so are slow to discover and to change. The change is more difficult when it involves an actual reversal of views, as many of us have had to experience on the subject of tuberculosis. Not only have we trouble with the developing truths of this science, but our tendency is here, as in our dealings with most diseases, to ask what is good for tuberculosis; that is, what drug or measure, rather than what therapeutic or physiologic end we ought to try to accomplish. It is somehow easier for us to think that quinin or cod liver oil; creosote or a change of climate; some inhalation of drugs or a so-called antitoxin, is good for tuberculosis, than it is to understand that the great first purpose of all treatment is to increase the physiologic power of the patient to resist the disease and to destroy or circumscribe its cause within his own body.

With all our study and experimentation, and in spite of all our theories and hopes, this truth stands as the one cardinal postulate of the subject up to the present moment. We may well search and pray for some shorter cut, for some drug or other thing that shall be as destructive of tuberculosis as quinin is of malarial plasmodia, or iodid of potassium is of actinomyces, or the antitoxin of diphtheria is of the infection of that disease. But we have not found it yet, and the sober fact confronts us that the one supreme need is for more power in the afflicted body to restrict or to destroy the tuberculous process. For our present guidance this truth is so vital that it takes rank with a confession of faith in religion.

Our greatest and most common error has been against this truth, and the results have been correspondingly sad. We have given our patients creosote or guaiacol or some other drug thought to be inimical to the tubercle bacilli, and have neglected the half dozen measures whose tendency is to increase the power of the patient. Thus we have often thrown away the great resources of rest, fresh air, outdoor life, changes in surroundings, and a systematic effort to increase the nutritive forces of the body—and all because we had prescribed some one remedy, or alleged cure, which, through fashion or bias, had filled us with a fatuous faith.

There is no objection to the tonic medicines, from cod liver oil to strychnin; nor to creosote and its modifications, if they do not disagree with the particular patient; nor to soothing inhalants that are harmless; nor to Koch's lymph in minute doses in the incipient cases; nor even to the very cautious use of the so-called tubercle antitoxins—always provided they are understood to be minor and subsidiary things, never of great value, and to be used only as aids to the general hygienic measures referred to—never to their hindrance.

To give creosote to the extent of lowering the digestive power, or to give serum injections that cause phlegmons and higher temperature, or to give coal-tar drugs for fever, while the patient is allowed to go in an unhygienic course of life without advice or correction, is an error so awful in its results that not even confession and penance are a sufficient atonement. And we have all of us sinned in some of these directions, and some of us grievously.

Every one of these patients should be constantly supplied with outdoor atmosphere in such abundance that every successive inspiration brings a fresh dose of air to the lungs, and none from previous expiration. Every one should have long hours of rest—if feverish, the rest recumbent should be almost or quite constant, for exercise increases the fever. The digestive powers should be made to do their best, under the most careful supervision, toward improving the nutrition and possibly also the resisting power of the patient.

But we have allowed our patients to stay indoors,

* Read before the Chicago Medical Society, 1904.

without proper ventilation, and breathe a poisoned house air three-quarters of the time. We have subscribed to the popular untruth—as pitiful as it is groundless—that patients in a gentle current of air called a *draught* are in danger of colds and other harm, and so we have kept them breathing over and over their contaminated air. The truth is that one never takes cold in any draught, even a wind, if his body and head are kept warm by clothing. The advice of the profession ought to be to keep in a draught, never out of it; only it would lessen the business of the physicians while it would be of incalculable benefit to the people.

We have given to some of the patients the terse advice to "eat all you can, and drink whisky," with the result that not a few of them have lessened their nutrition by eating a large meal once in a day or two and taking only trifles (often harmful) between times; and have distinctly lessened their powers by too much whisky, taken as the whim moved them.

We have believed the patients who say that they can not eat because they have no appetite, forgetting that a patient can usually be led to take the right food as well as to take medicine. We have agreed with the patient's theory that an appetite is necessary, and that food must be adjusted to the appetite; whereas the truth is that in tuberculosis the food ought to be adjusted to the patient, and the appetite to be ignored almost completely. Appetite is an emotional impulse fitted to the well. Sickness makes it morbid and a poor guide. Many a cadaveric, unhungry patient can be taught to eat six small doses of food daily and get fat—and even then to acquire an appetite.

We have acquiesced in the notions of patients that the more muscular development they can induce the better; so some of them have become athletes with less gain in the limiting fibrosis in their lungs than if they had kept their exercise below rather than above normal. For it is a rule, which probably has no exception, that a tuberculous patient is never helped to resist the disease by muscular development above his normal standard.

Then, we have fallen into the error of supposing that by deep breathing and stretching the sick lung the tuberculosis might be circumscribed; and this in the face of many proofs that all tuberculous tissues should be kept still. There is no good reason to say that lung tissue is an exception to the rule. What we need is a simple, safe and efficient means of putting the sick lung to complete rest in all unilateral cases. All the deep breathing devices are mischievous, and the breathing tubes that stretch the lung tissue are especially so.

In pulmonary hemorrhages we have given large doses of ergot, which has, if it has done anything, increased the blood pressure and so made a fragile vessel more likely to break and bleed. This is the only result that, from its physiologic effects, we had any right to expect from this drug. Such treatment not only makes the bleeding worse, but is like to the tragedy of being slaughtered in the house of one's friends.

And when a patient has bled nearly or quite to syncope, and his pulse has become so fine and weak as to be barely perceptible, we have, fearing he would die otherwise, filled him with normal salt solution that has again distended his vessels and pushed out the clots that had begun to form at the bleeding points, and so helped to destroy the little life that was left. It would profit us to reflect that the condition most conducive to a firm clot in a large vessel-opening is such a degree of exsanguination as to reduce almost to zero the blood pressure at the seat of disease. That patient is most likely to survive a large lung hemorrhage whose blood pressure is for some hours thereafter reduced to the lowest point consistent with life. And transfusions, infusions, and injections of normal salt solution are only in order when we know the bleeding vessels are firmly closed by clots, and when we have reason to think there are no other brittle vessels ready to break. What is more often needed is means to dilate the blood vessels of the periphery and so lessen the pressure in the deeper parts; such measures as fasting, free catharsis, opiates, and compression bands about the limbs at their junction with the body.

We have been guilty of great carelessness with many of our patients and have tolerated their doing a lot of foolish things that have much retarded their recovery. And these are mostly preventable things. One error is to eat what they happen to like and as and when they like it, regardless of consequences. These patients are prone to whims of eating, and occasionally get a fit of indigestion that sets them back for weeks. They are even more erratic in their exercise. Many a one has lost all he had gained in months by a single day of overdoing. The patient is governed by his momentary sensations, and rarely can be trusted to live continuously in that strict moderation which is necessary to keep up a sustained increase in resisting power. A consumptive can not afford to dissipate in anything for a single day, for when his vitality drops even a little his disease promptly becomes worse.

A consumptive's body should always be well and equably clothed, and should never be hampered or restricted by garments. Snug corsets and conventional gowns are an absurdity for the tuberculous woman; worn as they are by most such women, they frequently tip the scales in favor of death rather than recovery. No physician can fairly say to such a patient that the best is being done for her as long as she persists in thus clothing her body. She and her friends should be made to understand that they, not the physician, must take the risk of such foolishness.

Pulmonary tuberculosis is a long disease, and requires a long and uniform course of the best hygiene and management to ensure final and lasting recovery. It is not an enlistment for ninety days, but for a campaign of years. The people do not appreciate this, and the patients are usually disappointed when they discover it; and they rebel, and blame their doctors for not having told them more plainly. They should be told this truth at the beginning, and told so positively that it will stand out in their mental horizon like a mountain.

Climatic treatment of tuberculosis has rightly become popular the world over. Now, one of the first thoughts in behalf of a consumptive is to send him away for this benefit; and certain climates have become, in the minds of many people, a sure cure for the disease—to these minds nothing else is needed. And numerous benefits may come of a change to another and perhaps a better climate. It may mean not merely a new climate, but rest from labor, change of scene, amusement, relief from the tension of previous occupations, and from the annoyances of a previous environment; a cheerful and optimistic frame of mind may come also. The climatic remedy ought to mean all of these good influences, but usually it does not. And I am compelled to the belief, from abundant observation, that of all the remedies prescribed for the tuberculous, one of the

most unsatisfactory is climate, as it is usually employed. Going away for climate is one of the most misused of all the great measures for the sick; and so what ought to be a surpassing benefit often becomes a deception and a vision of death. This misfortune is largely an error of the people, but the profession is at fault about it also. In more than half the instances where it is advised it is for the wrong kind of cases, or at the wrong time, or for the wrong people; that is, it is ordered with poor regard for all the facts in the situation.

No other treatment for tuberculosis is so liable to be made nugatory by circumstances that are usually not thought of. Here is a small list of the faults: Proper climate treatment is always expensive. In more than half the cases it is spoiled by lack of money. Patients should not be sent away without from fifteen to twenty dollars a week for board and expenses. A consumptive, away from home, and especially if he must be alone, ought never to be compelled to count his pennies; it is generally ruinous to his chances of recovery. One of the most pathetic sights is that of a poor consumptive living in a cold, dreary room, going alone to some restaurant for his meals, and then having to study the bill of fare to see how much food he can get for the least money—usually getting the coarsest and least digestible articles, while his digestion is made as bad as it can be by his desolation. His appetite is poor and he eats as seldom as possible for this reason, and to save expense. He ought to eat twice as often as usual, instead of half as often, and of the most expensive foods, such as eggs, milk, tender meat, and the best stale bread and the best butter. These he rarely gets in this manner. Think of a man having to drag himself about and try to live in this way with his temperature frequently two or more degrees above normal. Such a picture is not at all uncommon in any land where consumptives gather.

Hopelessly sick patients, with lung and throat lesions dooming them to death speedily, are every day in the year posted off after climate a thousand miles away, often with little money and usually away from all the home treasures, and on a pilgrimage of death. Such patients should never be allowed to leave home, unless they are rich and insist on going. I know that they mostly start on such journeys on their own or their friends' initiative, and often against the advice of their physicians, but I am afraid that the physician sometimes consents or connives at their going—for some reason that he may think sufficient. The responsibility in such cases is awful, and the reason is frequently not sufficient. Is it possible that sometimes the reason is the lack of courage on the part of the physician to say an unpleasant truth?

These poor people away for climate are often homesick, for they rarely have a friend with them, unless it is some member of their family who must be at work, and so is of little use for comfort or nursing. Homesickness is fatal to any great gain by the patient, and usually prevents any gain while it lasts. Fever, indigestion, cough, and pain aggravate the nostalgia, and check the process of recuperation. A patient ought not to be sent away for climate unless some strong, resolute and cheerful nurse or friend can go with him, or be found at his destination. Even the wealthy are not an exception to this rule, and they can usually follow the rule, as the poor can not.

These patients in a strange land need supervision as well as friendship and comfort, and they usually fail to get it. They need the supervision of both physician and friend, and they often get neither. They do not need to see the physician often, but they do require to have their course of life outlined by him in rather minute detail, and then to be helped by some strong, sane friend or nurse to carry it out without a break. And my word "sane" means cheerful as well as sensible.

Most climate seekers tend to make their change a sight-seeing journey. They try to behave like the well people; they shun the sick and struggle to conform to all the habits of the well. They try to keep up with the well in side excursions; they are morally too weak to refuse invitations that mean exhaustion; they are unwilling to settle down, regard themselves as invalids, and keep still. Thereby they tax their powers unduly and fail to make the best of their opportunities. Their pretenses are like whistling to keep up their courage, but the tubercle bacilli are no respecters of such devices.

Physicians ought to warn all climate-seeking patients against these demoralizing tendencies. Those patients do best who do not pretend to be well, but try patiently to become so. The mental tendency of most of them is to pretend not to be sick. They need help to resist all such cowardly impulses.

The modern, well managed sanatorium offers all these and many more benefits.

I am aware that if all the cautions here expressed were to be strictly observed, many fewer tuberculous persons would be sent away to climates for their health.

What would I do with those forbidden to go? I would keep them at home, or near home and friends, and give them the benefits of the best of their own climates. That is, outdoor life so far as possible, fresh, clean air every minute of their lives, as much rest as need be, a rigid regulation of their exercise, and a thorough study of their nutritive powers, with means to make the very most of them. They should dress and behave like the cheerful sick seeking health; and most of them would recover. Thus regulated, their lives would be as changed and novel as though they had gone to the mountains, and they would have all the benefits of the novelty without its drawbacks.

If you say that these doctrines defy all our previous notions of the value of special climates, the reply is that there is no known medicinal virtue for tuberculosis that inheres in any climate. Climates are chiefly valuable for the consumptive as they make it easy for him to be out of doors, or to have free ventilation indoors. It is the clean atmosphere that circulates freely around the earth that is needed, and needed all the time. It is true that some climates are more comfortable than others, and more enticing; and for those who cough and expectorate much a dry air is best, while high altitude helps to start a fresh constructive force in some cases. Sunshine is both comforting and healthful to the sick, but perhaps of less value than is usually thought; it certainly seems a very vital thing when it is longed for and can not be had; and it is beyond our reach more than half the hours of our lives the world round.

It is the management of the sick, vastly more than climate that tells for recovery of the tuberculous everywhere. A contrary opinion has led us for years to neglect one of the most valuable means for the good of these patients. At great cost of money and trouble we have traveled thousands of miles in search of something valuable, and neglected the precious thing that is always within our reach—and at the end of the journey we have met with only disappointment and despair.

We have beatified the climates of the mountains,

the deserts and the balmy fields of the West, and forgotten that in Illinois we have most of the valuable features of the best climates. With the same hygienic management at home, we can give patients 85 per cent. of the benefit they could have in the best climates, while they who go away average to lose quite 15 per cent. of the possible benefits by the drawbacks that beset so many of them in their new domiciles.

It has been the fate of all mankind, who seek for a great good, to look for it in some far country. The Holy Grail seems always to be found on the other side of the hills, never on the hither side or here. But it is here, and whoever truly seeks it usually finds it within his reach. And the home land teems with benefits untouched and that mutely tempt us to use them.

The surest proof of the skill and usefulness of a physician is his capacity to turn to the benefit of the sick the simple and homely facilities that are all about them. The best results with the fewest tools is the test, and no more promising task was ever offered to us than to bring to the thousands of tuberculous victims (who are unable to go properly to the better climates), and at or near their homes, the benefits of the modern treatment of this disease. And it can be done, either in their own houses or in home sanatoria, and done superbly, in a large proportion of cases. If it were done it would reduce the mortality another 10 per cent.— and it will be done, for the twentieth century internist is capable of it, and he will not fail.

THE SURGICAL ASPECTS OF MAJOR NEURALGIA OF THE TRIGEMINAL NERVE.

A REPORT OF TWENTY CASES OF OPERATION ON THE GASSERIAN GANGLION, WITH ANATOMIC AND PHYSIOLOGIC NOTES ON THE CONSEQUENCES OF ITS REMOVAL.

HARVEY CUSHING, M.D.
Associate Professor of Surgery, the Johns Hopkins University.
BALTIMORE.

(*Continued from page 865.*)

CASE 3.—Alex. D., a Polish shoemaker, 38 years of age, entered the Johns Hopkins Hospital for the second time in January, 1900.

History.—His neuralgia was of comparatively short duration, having been present for only two years. It had originated in the supraorbital territory, had invaded the second division the following year, and in March, 1899, a peripheral neurectomy of the supraorbital and infraorbital nerves was performed. This had given him only temporary relief and after a few months the pain returned and the lower, third division, had begun to transmit impulses of pain. There was also a suboccipital extension. The case was a typical one of tic douloureux with an involvement of all three divisions of the right side, but was not an instance of the extreme type of the disease.

Operation.—January 15, 1900. Chloroform. The zygoma was not excised in this case. Enucleation of the ganglion (Fig. 10) presented no great difficulties, although it was my first experience with a bloody case. The wound was sufficiently dry after the extirpation to justify closure without drainage. The pulse during the operation was slowed to 50 beats a minute. Tissues examined by Dr. Barker.[27]

Postoperative Notes.—Convalescence promised to be uninterrupted. The highest recorded temperature was 100 degrees the day after the operation. Healing occurred by primary union. There were no occular palsies in this case; the pupils remained equal and reacted to light. (Fig. 11.)

The patient was up and dressed the fourth day after the operation. Eleven days later, just as arrangements had been made for his discharge from the hospital, after an exposure, he had a severe chill and there followed an outcrop of facial and sacral herpes, complications from which kept him back for some weeks. This has been made the subject of another communication.[28]

Late Result.—January, 1903. Three years after operation. The patient remains well, but the cosmetic result is not particularly good. There is considerable facial deformity, due to the muscular atrophy and replacement of the zygoma—possibly the more evident since the patient has a very broad cephalic index and unusually well-marked zygomatic arches. A slight elevation of the eyebrow is possible on the side of the operation, evidencing a reunion of the facial twig to the occipitofrontalis (pars frontalis). The area of anesthesia remains practically unaltered; it includes the tragus and anterior wall of the auditory canal.

CASE 4.—Mrs. Elizabeth R., aged 60.

History.—She had been a great sufferer from toothache during her earlier years. All the teeth had been extracted some years before the onset of her neuralgia. The latter was of eight years' duration and originated in the left nasolabial region. It had been associated with great difficulty in eating or swallowing; from the very beginning movements of the lips or even opening of the mouth would inaugurate a paroxysm. Early in the disease the pain extended into the eyeball; the conjunctivæ became inflamed and a chronic granular inflammation of the lids resulted. The more or less constant purulent discharge due to this condition, owing to pain which its removal occasioned, had been left untreated. She has suffered always from chronic constipation.

Fig. 10.—Ganglion (slightly magnified) from Case 3, showing upper surface. Ophthalmic division removed as a separate piece. Ramus mandibularis shredded, from effort to evulse instead of dividing it. Arrow points to imprint of evulsing clamp.

In August, 1897, an operation was performed at the Johns Hopkins Hospital on the infraorbital nerve, followed by eighteen months of respite. In June, 1899, a second operation of the same nature was performed. Relief, more or less complete, followed for only four months. With the return of pain the first and third divisions began to show signs of involvement. In June, 1900, the regenerated infraorbital nerve was for the third time evulsed, with a partial relief lasting only four months. The scar which had been produced by the three infraorbital operations had led to an ectropion, which, with the chronic inflammation of the conjunctiva, left the eye in a bad condition.

Ganglion Operation.—January 17, 1900. Ether. From the onset this proved to be a difficult and bloody case. The operation lasted two hours, most of the time having been expended in packing to control the venus hemorrhage. The pulse was slowed, during the entire period of temporal lobe elevation, to an average of 50 beats a minute. The zygoma was temporarily

28. Perineal Zoster, Am. Jour. Med. Sciences, March, 1904.

resected, and at the close of the operation wired in position. The ganglion, although somewhat damaged from the effects of the compression, was finally removed in toto, together with the sensory root as a separate piece (Fig. 12). Pathologic report by Dr. Barker.[11]

Postoperative Notes.—As had been feared, the previous condition of the eye rendered a subsequent keratitis almost certain. A severe conjunctivitis with ulcer formation and corneal opacity, iritis, and posterior synechiæ soon developed. I believe now that it would have been possible to have avoided this extreme process had we at that time been sufficiently versed in the therapeutic requirements of the eye in these cases. The eye, in spite of the advanced process, with vigorous treatment became almost entirely healed. The corneal opacity, however, was of such extent that evidently vision would be much impaired and the patient's inability to move the lower lid and to completely close the eye rendered a subsequent inflammation and break down probable. In view of this fact, and fearful lest, happening after her return home, the other eye might become involved, it was considered best and was

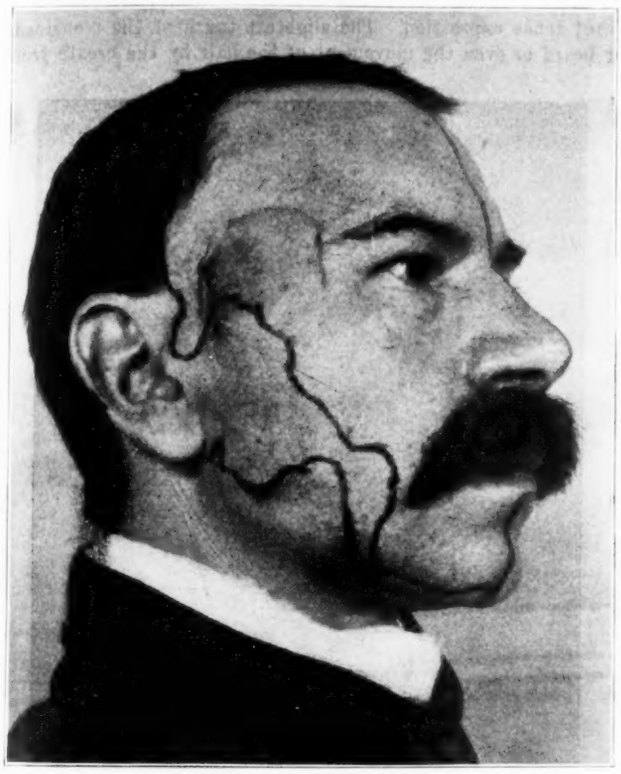

Fig. 11.—Case 3. Areas of analgesia and hypalgesia.

desired by the patient that an enucleation be performed. This was done eight weeks after the operation.

The convalescence otherwise was quite uneventful. The highest temperature was 101 degrees the night of the operation. She was free from pain, bright, hungry and sitting up in bed on the following day. The wound healed *per primam*. A partial palsy of the sixth nerve, due to the excessive packing in the neighborhood of the cavernous sinus at the time of the operation, had cleared up before the eye was enucleated. Fig. 13 shows the area of anesthesia as it was marked out on the tenth day.

Late Result.—December, 1903. This is not especially brilliant. There is some stiffness of the jaw and some complaint of a dragging sensation and occasional tingling in the enucleated eyeball. The deformity from atrophy is not great, though accentuated by the fact that the zygomatic arch was preserved. The patient wears an artificial eye, which is less unsightly than the injected one was before the ganglion operation. She has had no neuralgia.

CASE 5.—David H., aged 46, a farmer.

History.—He had suffered from a right-sided neuralgia of a severe type for nineteen years. The pain was said to have originated in a tooth in the lower jaw. There was early recourse to morphia. On three previous occasions, April, 1898; August, 1900, and February, 1901, various operations had been done on the inferior maxillary nerve. The dates suffice to show that relief from pain was but transient. He had lost 20 pounds in weight, was incapacitated from work, and at his last admission there were evidences that the second division had become involved. In the spring of 1901, he entered the hospital for the purpose of having the ganglion removed, but a temporary moderation in the severity of his paroxysms had caused the operation to be deferred. Not a case of major severity.

Operation.—October 19, 1901. Chloroform. In this case, and in all the following ones, the zygomatic arch was not only resected for operative reasons, but excised for cosmetic ones. The case proved to be very bloody and the operator feared several times that it would have to be abandoned or an attempt made to enucleate the ganglion at a second sitting. As often happens in these especially wet cases, if patience is exercised, some, often unaccountable, alterations in conditions, whether by a change in position of the head by elevation or rotation of the same or from a sudden thrombosis of the torn venules, the bleeding ceases, and what had previously been an exceedingly wet wound becomes unexpectedly a dry one. This,

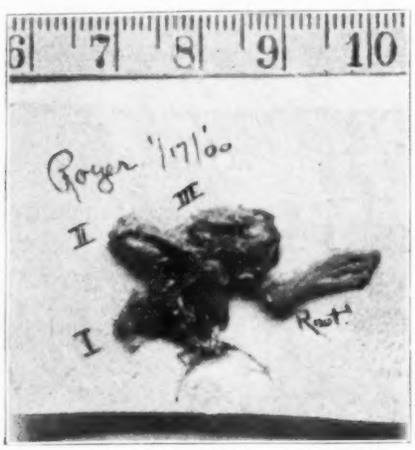

Fig. 12.—Tissues from Case 4. Sensory root as a separate piece. Ganglion somewhat fragmented by the traumatism of packing.

fortunately, happened here and a complete enucleation was possible one moment when the moment before the idea of abandoning the operation had been in mind. In this case for the first time a small drain was left in the posterior inferior angle of the wound.

Postoperative Notes.—Convalescence was uninterrupted. The sutures were removed on the second day; healing was *per primam*, except for a small granulating spot where the drain had been removed at the time of the first dressing. A slight temporary weakness of the external rectus was present. There were no postoperative complications whatever. The operative result and areas of anesthesia are shown in Fig. 14.

Late Result.—The case has been far from a satisfactory one. The patient has returned to his opium eating and has endeavored to extort money from the hospital on the grounds of having experimented with him, an opinion for which the routine daily observations on sensation, taste, position of palate, etc., are probably responsible. The patient has been seen and examined only once, a year after the operation, when anesthesia to touch and pain remained present over the entire trigeminal area, including the tragus. He complains greatly of stiffness in the jaw and numbness of the face and regards the ganglion operation as quite an unjustifiable one. So far as I am aware, he has remained free from neuralgia.

CASE 6.—Augustus W., a farmer, aged 64.

History.—He had suffered from sick headaches all his life. His neuralgia was of fourteen years' duration and had originated in the first division; it was left-sided. After four years, the pain had extended into the infraorbital area; from this time dates his difficulty in deglutition. All the teeth were extracted. More recently, the third division has become involved. In October, 1899, a peripheral operation with evulsion of the infraorbital nerve was performed, with subsequent relief for thirteen months.

Examination.—At the time of his admission, the case had advanced to one of the most extreme degrees of major tic douloureux. There is more or less constant pain with frequent exacerbations, during which he often writhes on the floor. The pain originates chiefly in the region of the nasolabial fold, whence it spreads into the entire trigeminal territory. The individual paroxysms last about 60 seconds. He is weak, emaciated, with a white tangled beard, which, as well as the hair on the left side, is matted with the secretory ac-

Fig. 13.—Case 4. Photograph on the tenth day, showing areas of analgesia as then inaccurately delineated.

cumulation of months; he does not remember when he last touched water to his face. He is markedly arteriosclerotic.

Operation.—November 13, 1901. This proved to be a very satisfactory, dry and uncomplicated case. The ganglion was extracted *in toto* in about 60 minutes. Before the operation, the eyelids had been sutured as advocated by Horsley and others. It is the only time which I have practiced this detail. A small drain was left in the posterior inferior angle of the wound, and removed forty-eight hours later.

Postoperative Notes.—Convalescence was without incident. (Fig. 15). There was a complete paralysis of the abducens and a partial palsy of the motor oculi. The former regained its function only after a few weeks, the latter in a few days. The patient had gained fifteen pounds in weight within a month after the operation.

Late Result.—December 17, 1903 (by letter). Two years after operation he remains perfectly well.

CASE 7.—Rev. W. S., aged 43. Referred to me by Dr. Osler. This case possibly represents the most advanced type of the disease in this series.

History.—The pain originated in 1882 in the teeth of the right upper jaw. Extraction of the teeth from this quadrant served only to aggravate it. Twelve years ago an infraorbital operation was performed by Paul Bruns, in Tübingen, followed by relief for six months. The pain returned with increased intensity. In 1894 Meckel's ganglion was removed, in Boston, with complete relief for two years. During the succeeding six years he has run through the usual series of drugs, at the hands of many physicians, and has been repeatedly advised never to undergo any further surgical measures. Strychnia was given a prolonged trial for a period of six months and only given up after the production of serious toxic symptoms. He has been confined to a dark room at his home for months and has only been deterred from self-destruction by his Christian beliefs.

Examination.—He looks a man of sixty. The paroxysms even without apparent cause recur with but brief periods of intermission and there is more or less constant pain between them. All three divisions of the trigeminus are involved. He is unable to protrude the tongue, to speak, to open the mouth, to swallow or to let his facial muscles relax from their constant tense expression. The slightest touch of the moustache or beard or even the movement of the hair by the breath from

Fig. 14.—Case 5. Photograph on the tenth day, showing areas of analgesia and hypalgesia inaccurately delineated.

the nostrils may start a paroxysm. An unusual light or unexpected sound may do the same. A suboccipital extension is present. Weight, 125 pounds.

Operation.—February 15, 1902. Ether. The patient, as is frequently the case, had to be anesthetized before it was possible even to clip the hair from the operative field, much less to otherwise prepare it. Blood pressure observations were taken in this case, as in all succeeding ones. The great pressor response associated with the paroxysms during the period of anesthetization are represented in the chart. (Fig. 2.) The skin incision was made in the line of the old scar left by the operation on Meckel's ganglion (Fig. 16), which had already paralyzed the occipito-frontalis, and which, from atrophy of the temporal, together with preservation of the zygoma, left quite an obtrusive depression in the temporal region. The zygoma was excised. The case was a very clean-cut and comparatively dry one. The ganglion was removed in its entirety. No particular difficulties from bleeding were encountered either in the approach or in the enucleation. The floor of the temporal fossa was rongeured away somewhat more deeply than

customary, owing to an unusually high bony projection from the floor of the temporal fossa. The temporo-maxillary joint was opened in this step. This accident, contrary to what was feared, had no subsequent effect on stiffness of the jaw; indeed, there was less complaint of this sequel than usual, probably owing to the division of the temporal muscle which had already been paralyzed and become fibrous, as a result of the earlier operation. The wound was closed without drainage.

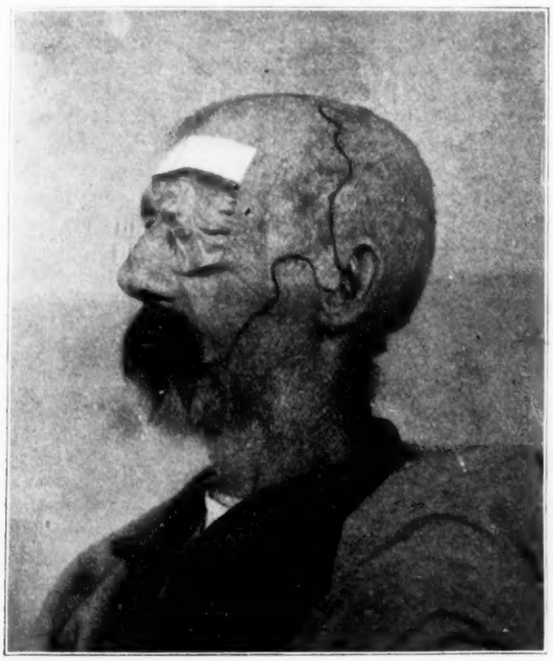

Fig. 15.—Case 6. Photographed on the eighth day, showing area of tactual anesthesia.

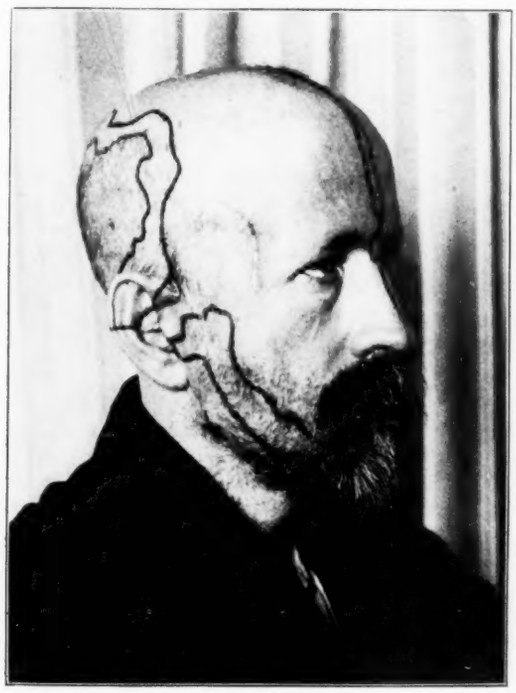

Fig. 16.—Case 7. Photographed on the tenth day, showing areas of anesthesia to touch and pain. Variations from average type. Incision unnecessarily high, having been made in the scar of an earlier neurectomy.

Postoperative Notes.—Convalescence was absolutely uninterrupted. The patient gained 11½ pounds in the two weeks after the operation; 35 pounds in the following four months. He preached twice in his church on the third Sunday, the first time in two years. Many of the most important data which I have been able to gain by postoperative examinations have been secured through the intelligent co-operation of this gentleman.

Late Result.—January 1, 1904, two years after operation. (Figs. 17, 18.) He remains perfectly well and "has not lost half an hour's work from illness since his operation." Has been troubled in very cold weather by an occasional "fogging"

Fig. 17.—Case 8. Outlines of analgetic and anesthetic fields after two years.

Fig. 18.—Case 7. Late result showing slight though unobtrusive flattening of the face. Zygoma removed.

of sight in the right eye, a condition which passes off after a short rest. He weighs 165 pounds, a gain of 40 pounds.

CASE 8.—George E. P., aged 47, a photographer, had suffered for seven years from a right-sided neuralgia.

History.—This had originated in the region of the temporo-maxillary articulation and involved chiefly the area of the third

division. Soon after, several teeth were extracted with a resultant augmentation of symptoms. The pain persisted and in spite of all treatment steadily increased in severity. In June, 1897, the inferior maxillary nerve was evulsed. At this

Fig. 19.—Case 9. Eighth day. Areas of total anesthesia. Palsy of right abducens with slight injection of conjunctiva. Patient endeavoring to look toward his right side.

operation an unerupted molar tooth was found, apparently pressing on the nerve, and was thought doubtless to have been the occasion of the neuralgia. The old history states that the anesthetic was very poorly taken at this time. Very slight if any relief was afforded by the operation. Although possibly less severe for a few months, he was never quite free from pain. He returned to the hospital five years later suffering from paroxysms of the most major sort and with all three divisions involved. The pain had progressively extended from the third into the areas of the second and first divisions. For three years he had been almost completely incapacitated, had given up his business and for almost a year had been confined to his room.

Condition on Admission.—His pain is constant, with extreme exacerbations; he is much emaciated and does not weigh a hundred pounds. Talking, swallowing, or any movement of the tongue or face, is almost impossible. He is incessantly hungry, but every effort to take food produces a paroxysm. His digestion is completely upset from constant drug taking. He cannot protrude his tongue, but on slight opening of the mouth it is seen to be dry and heavily coated. He is a small, sallow, dried-up, little old man, looking 75, though his recorded age is 47. He is "stone deaf" and it is only possible to communicate with him in writing. He has been blind in one eye, on the sound side, from an injury received in childhood, and vision has rapidly been failing in the other. The right side of the head is raw and sore from local applications and incrusted with dried cutaneous secretions; his hair and beard are matted together. His wife says that his face has not been touched for eighteen months. The patient is so ill that only a cursory physical examination was given him. It is impossible for him to keep quiet; he constantly moans and often cries with pain. The operation was performed the day after his admission.

Operation.—March 24, 1902. The patient's head was markedly brachycephalic and the ganglion proved to have a very deep situation. There was comparatively little loss of blood, and the case, from an operative standpoint, proved so comparatively simple that little heed was given to the warnings of his blood pressure chart (Fig. 3), sufficient dependence on which at the time of this operation we had not learned to give. It was thought that sensory impulses from manipulation of the ganglion were the occasion of the depressor response and the ganglion was cocainized in the hope of "blocking" the nerve. Despite the falling blood pressure, the patient's condition seemed to be sufficiently good to justify continuance of the operation. The anesthetic was well taken; his pulse and respiration continued regular; the blood pressure, alone, giving for some time indications of trouble, which were disregarded. The ganglion was removed *in toto*, but the pressure continued to fall, even after the release of the temporal lobe, in spite of every effort to check it; the respiratory center soon showed evidences of anemia, the pulse became irregular, respiration ceased, and despite its artificial continuance the heart ceased beating after about ten minutes.

It is difficult to record fatalities due to operations, which ordinarily have a successful termination, without attempting on some grounds or another to excuse the unhappy outcome. There is none to offer in this case. Unfortunately, although permission was given to remove the ganglion on the opposite side for purposes of examination, a full necropsy was not allowed. The partial exposure of the brain which was rendered possible showed no macroscopic evidence of cerebral lesion. There are several features of the history which make it seem quite possible that an intracranial growth was the underlying cause of his malady. In some of the fatal cases heretofore recorded an autopsy has brought to light an unsuspected neoplasm, a psammoma in Lexer's and a cholesteatoma in Krause's case.[29] Whatever may have been the underlying condition, the operation was the immediate cause of death and should have

Fig. 20.—Case 10. Seventh day. Areas of analgesia and tactual anesthesia. Variation from average type.

been abandoned at the time of the patient's beginning failure and reundertaken subsequently if deemed justifiable.

29. Lexer (Archiv f. klin. Chir., 1902, vol. lxv) has considered at some length the relation of intracranial tumors to trigeminal pain and has collected several cases. I have myself seen three such cases, in all of which, however, there was present a certain amount of facial anesthesia, and in one of them an associated involvement of neighboring nerves which rendered the diagnosis easy; there is but slight, if any, diminution in the acuity of sensation even in very long-standing cases of true neuralgia, leaving out of account, of course, the results of previous outside neurectomies. No preliminary sensory tests unfortunately were carried out in the case above recorded owing to his condition and the impossibility of easy communication. The eyegrounds should have been examined as well.

CASE 9.—W. H., aged 48, railroad employe.

History.—He has been subject to headaches all his life. Twelve years before his ganglion operation, his neuralgia began with pain in the third division. In 1890 some of his teeth were extracted. The pain soon after spread into the second division, and all his remaining teeth were removed. In 1894, the inferior dental nerve was evulsed, with subsequent relief for a few months. With its return the pain finally extended into all divisions of the fifth nerve; each paroxysm would originate in the lower jaw, spread into the infraorbital region, around and through the eye, across the face as far as the tragus and over the forehead to the crown.

Examination.—The right side of his face perspires much more than the left. He has more or less pain all the time, and, although he courageously keeps at work in order to retain his position, he has to "lay off" many days in each month. He has lost fifteen pounds in weight. This is a moderately severe, although not a totally incapacitating case of tic.

Operation.—July 8, 1902. Ether. Preliminary clamping of the common carotid artery was done (Crile). The operation proved to be a very easy one, and though some oozing continued after the enucleation, which rendered the placing of the small drain advisable, it was a relatively dry procedure. Subsequent to the operation, there was some frontal headache on the opposite side. A total paralysis of the sixth nerve, with a slight palsy of the third, was occasioned by pressure (Fig. 19). These oculomotor disturbances cleared up in the course

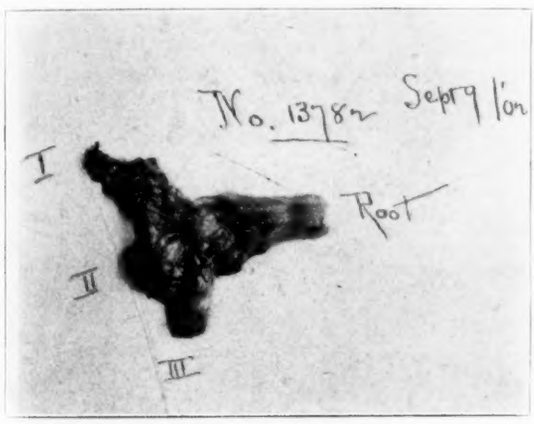

Fig. 21.—Ganglion from Case 11.

of a few weeks. He gained nine pounds in weight in the ten days after operation. He has gained in all twenty pounds and has kept this weight.

Final Result.—Letter, July 1904, two years after operation. He has no neuralgia, remains well and has been on duty every day since returning home. He says that his right pupil remains smaller than the other. He has had some discomfort from "numbness" and from an occasional fogging of the eye, which lasts for a few hours, as in Case 7.

CASE 10.—J. J., aged 30, a laborer.

History.—He has suffered from a left-sided neuralgia for the past four years, and attributes it to the exposure attendant on his occupation, that of an oysterman. The pain originated in the second division, the face, gums and palate being involved. Several of his teeth were extracted. A constant increase in severity, so that eating, drinking, talking, etc., became almost impossible, was associated finally with an involvement of the first and third divisions.

Examination.—The pain is more or less continuous with paroxysms every two or three minutes, lasting from thirty to forty-five seconds. Definite "pain-points" are present at the angle of the mouth, on the malar eminence and on the supraorbital ridge. During a paroxysm, his face is greatly drawn and the eye closed, and he exhibits the peculiar chewing movements characteristic of some of these cases. A severe but not an extreme case. All things considered, it seemed advisable to remove the ganglion instead of temporizing with peripheral operations.

Operation.—July 12, 1902. Preliminary clamping of common carotid artery was performed (Crile). The case proved to be a very bloody one from the start and the approach, as well as the extraction, of the ganglion was most tedious. During the operation the clamp was removed from the carotid without affecting the bleeding one way or the other. A complete extirpation was finally accomplished. A drain was left in the posterior angle of the wound.

Postoperative Notes.—Convalescence was absolutely uneventful. Some unilateral headache existed for two or three days. He was up on the third day and was allowed to return home at the end of the second week. (Fig 20.)

He has remained perfectly well and free from pain; has been constantly at work; has kept a gain of twenty pounds in weight; and, aside from the misfortune of having had a temporary inflammation of the cornea from undue exposure and traumatism, he has had no postoperative disturbances. The slight keratitis which occurred will be discussed in a subsequent section.

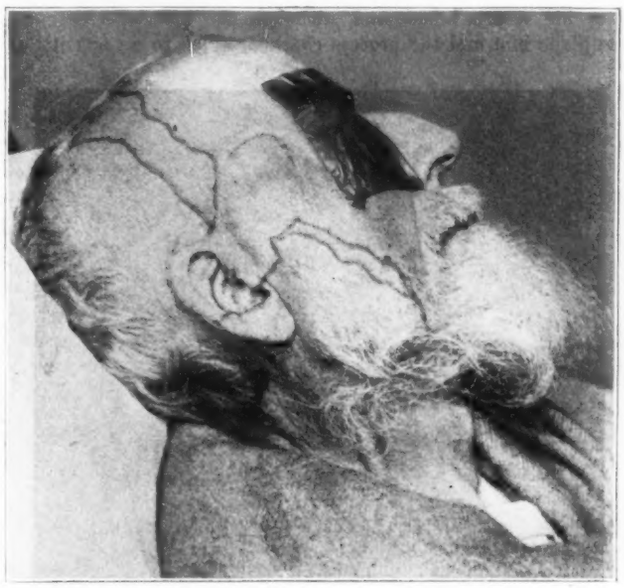

Fig. 22.—Case 11. Areas of anesthesia photographed on the fifth day. Variations from average type.

CASE 11.—Mr. A. G., aged 69, a salesman, was referred to me by Dr. W. S. Munro of Providence.

History.—Since youth, the patient has suffered from ill health. He has been a delicate and nervous man. His neuralgia has been of nine years' duration, originating with supraorbital pain which soon extended into the area of the second division. In 1899, an operation was performed on the supraorbital and infraorbital nerves. Relief for nine months followed. A supposed injury to the seventh nerve occurred at the time of this operation, resulting in a slight palsy, which has never quite cleared up, and in an asymmetrical position of the soft palate; also in slight disturbance of taste. In August, 1902, a second operation was necessitated by a return of pain. Relief was only transient. There has been recently an extension to the third division, with "drawing pains" in the lower lip. He has taken a large amount of drugs and had recourse early to morphia.

Examination.—Examination shows an old man, much older than his years, with marked evidences of arteriosclerosis and a weak heart. He is unable to swallow, to chew, to clear the throat, to speak, or to touch his face without inciting a paroxysm. The pain has been "intense enough to craze him;" he has had suicidal thoughts.

Operation.—September 9, 1902. Ether. Duration of operation, forty-five minutes. Characteristic blood pressure reaction.

After a series of four very bloody ones, this proved to be a simple, easy, dry case. The ganglion (Fig. 21) was kept in sight all the time and, except from the vein which accompanies the *Ramus mandibularis*, no bleeding of any consequence occurred. No drainage was necessary.

From its ease of performance this should have been the best of all my cases, but unfortunately, it was attended with unusually serious postoperative ocular sequelæ. The combination of the old infraorbital and supraorbital incisions, together with that necessary for the ganglion extirpation, had served to paralyze the orbicularis, and, by shutting off the veins, led also to a considerable edema of the lids. There was at the same time a complete pressure palsy of the third cranial nerve with ptosis and dilatation of the pupil. The fourth and sixth nerves escaped injury.

Postoperative Notes.—Convalescence, aside from the ocular complications and a unilateral headache, lasting a few days, was without incident (Fig. 22). A ravenous appetite soon brought the patient's weight from 103½ pounds, the day before the operation, to 122 pounds four months later. I was unable, unfortunately, to keep him under observation until the ocular palsies had cleared up. An ulcerative keratitis set in after his return home, and, although the best of treatment was given him and the process checked, it led to an opacity of the cornea. Movements of the eyeball ultimately returned, as well as motion in the orbicularis and levator palpebræ.

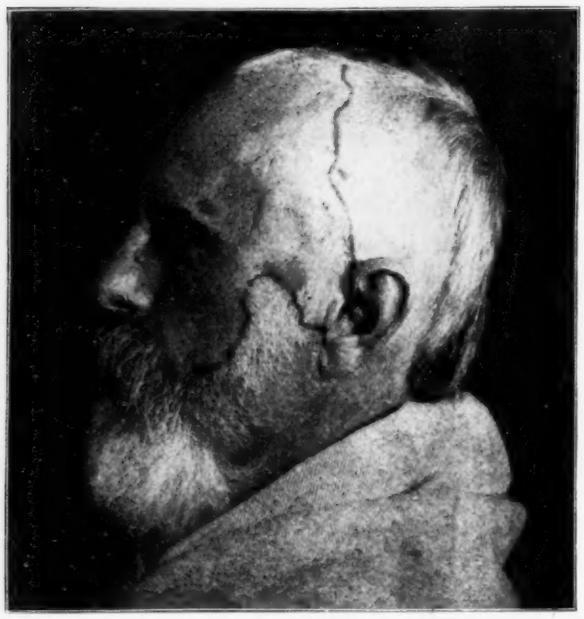

Fig. 23.—Case 12. On eighth day. Showing outline of field of absolute tactual anesthesia as present at that time.

Late Results.—One and one-half years after operation. So far as the neuralgia is concerned, the patient says that he is quite well, but is annoyed occasionally by a "sensation of soreness and tingling about his eye." He unfortunately suffers from other complaints associated with advancing years and his arteriovascular lesions. Though from an operative standpoint this promised to be a brilliant case, from its late results it cannot be so considered.

CASE 12.—G. D. B., aged 51; a farmer.

History.—He had suffered for 19 years with neuralgia, whose onset in the supraorbital region on the left side was attributed to exposure and fatigue on one occasion when he had to assist in the effort to put out an extensive fire. At first with intermissions of a few months and then weeks and then days, pain has finally become almost continuous. For the past two years he has never been entirely free from pain. Severe suboccipital extension is present and the pain even shoots down to the shoulder, and, he says, sometimes through the body to his feet. The paroxysms are flash-like and always accompanied, he says, by ocular impressions of light. Paroxysms recur rapidly and, as the patient says, "they have no schedule." They are sometimes very protracted and have been so severe as to cause vomiting. He has gone often for almost a week without having food pass his lips, and he has contemplated suicide. The teeth have been extracted, but he has had no peripheral operations. His hair turned white on the side of the neuralgia long before it changed on the other. The severe character of the pain in this case and the fact of its involving all three divisions seemed to render temporizing with peripheral operations inadvisable.

Operation.—October 18, 1902. Ether. Duration, one hour and thirty minutes. A comparatively easy case, with what at the time was supposed to be a complete extirpation, though the ganglion was torn in its removal. No drainage was necessary.

Postoperative Notes.—Convalescence was uneventful (Fig. 23). No change whatever was present in the pupil nor in the movements of the eye. It was evident, however, before the patient's departure from the hospital that the operation had been incomplete, and a portion of the ophthalmic division with its ganglionic connections to the trigeminal nerve had been left. There was an early partial return of sensation over the forehead, on the upper lid and the side of the nose, and although the operation has proved sufficient up to the present time to stop the paroxysms of neuralgia, some sensory discomforts remain in the supraorbital territory. The case shows the impossibility of relieving a patient, with neuralgia which has originated in the first division, by a simple extirpation of the lower two-thirds of the ganglion. In its result it falls in line with the majority of the earlier cases, such as were reported by Krause in his first communications, by Dr. Tiffany and by others, and there can be no certainty of a total and permanent abolition of neuralgic pain in the ophthalmic area.

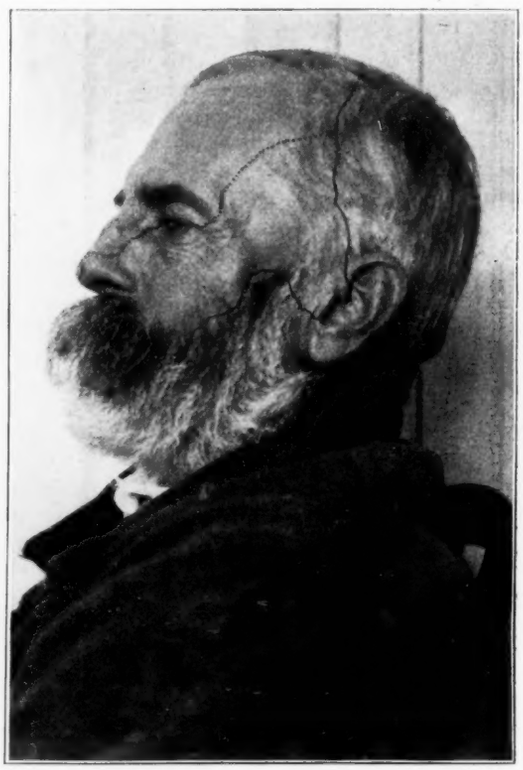

Fig. 24.—Case 12. After eighteen months. Partial return of sensation in field of ophthalmic division. Within dotted line is found hypalgesia, hypesthesia, thermoanesthesia.

Late Results.—One and a half years. Patient readmitted to hospital for hemorrhoid operation. Examination shows a partial return of sentiency to pain and touch in ophthalmic division (Fig 24). Total thermo-anesthesia persists. Pig-

ment has largely returned to hair and beard. Says he "looks and feels a new man."

CASE 13.—W. V., aged 49, a laborer, was referred to the hospital by Dr. H. M. Thomas.

History.—He had suffered from a right-sided neuralgia which began in the lower jaw twelve years before his admission. There had been a comparatively rapid extension in this case to the areas of second and first divisions. Although not completely incapacitated, the frequent interruptions in his work, with the loss of time and of money for medical attention which he could ill afford, had been a great burden to him. No preliminary operations were done in this case, as he wished to undergo a permanent cure, even though there were attendant risks.

Operation.—December 20, 1902. Ether. The case proved to be a difficult one. An unusually high systolic pressure under the anesthetic may have accounted for this. Bleeding was the occasion of frequent delay during the approach to the ganglion and more especially during its enucleation. Almost two

Fig. 25.—Case 13. Print from a poor negative, taken on the tenth day, showing delineation of tactual anesthesia, line of incision and Buller shield.

hours were necessary for the completion of the operation. It was considered advisable to leave a drain.

Postoperative Notes.—Convalescence was uneventful (Fig. 25). There was slight postoperative palsy of the sixth nerve, which disappeared within a few weeks. Contraction of the pupil, which was noted immediately after the operation, did not last more than a short time, and the pupils are now equal. He has had some stiffness of the jaw. His result is in an inverse ratio to the satisfactoriness of the operative procedure. The postoperative deformity is slight (Fig. 26). He has had no return of pain whatever. The anesthesia (Fig. 27) and other functional postoperative sequelæ of removing the fifth nerve have remained unchanged up to the present time (one year). Frequent examinations have been possible, as the patient is a Baltimorean.

CASE 14.—Mrs. W. H., aged 47.

History.—She had suffered for many years with left-sided neuralgia. She was an old friend of the hospital, having already undergone there several peripheral operations. Her neuralgia finally involved the entire trigeminal territory and with an intensity which left her never quite free from pain.

Examination.—She presents the usual picture of severe tic; any sort of stimulation suffices to inaugurate a paroxysm, during which she violently rubs her cheek and forehead, so that all the hair from the eyebrow and temporal region on that side and much of the skin has been worn off by friction. Her chief pain originates from the areas (second and third divisions) which were rendered anesthetic by her previous peripheral operations and which now are "painfully numb" (*hypæsthesia dolorosa*).

Operation.—Jan. 22, 1903. Up to the point of extracting the ganglion the case proved to be a very simple one. When the structure was clamped, however, after its liberation, a shred of dura, leading from the ganglion to the side of the lateral sinus, must have been caught in the forceps, for when the ganglion was slowly rotated out a well of venous blood spurted up in the wound in a way in which I have never before seen bleeding in a ganglion case. There was almost immediately a great fall in blood pressure and the wound was quickly packed with gauze. After waiting some time and preparing the incision for its final closure, an effort was made to slowly remove this packing, but as soon as the deepest piece of gauze was again liberated the same

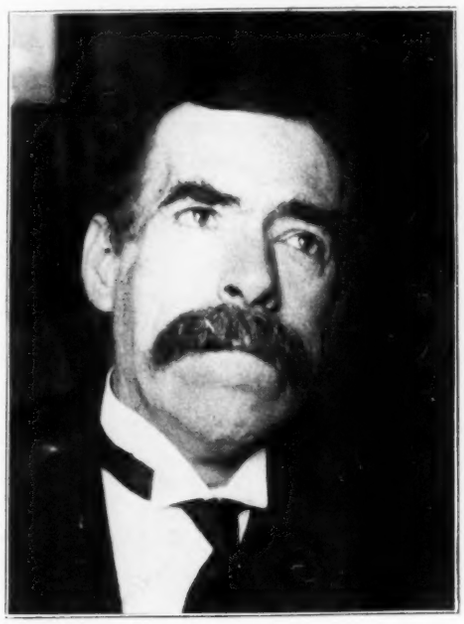

Fig. 26.—Case 13. After one year. To show slight but unobtrusive flattening of face. Zygoma removed.

gush of venous blood recurred. Consequently, only a partial closure was possible and the patient was returned to bed with the wound packed.

Postoperative Notes.—Nausea and headache ensued for two or three days, the latter being confined to the right side and was only completely relieved when it was possible to permanently remove the drain, as will be described. Attempts were made on the second day and again on the seventh day after the operation to remove the gauze; each time a gush of blood necessitated prompt repacking. February 3, twelve days after the operation, an hour was spent in the painstaking effort to carefully displace the pack. When the last piece of gauze was slowly lifted from its bed a gush of blood followed sufficient to produce syncope and to occasion anxiety for the patient's life. A week after, while the patient was straining at stool, a spontaneous bleeding occurred. The hemoglobin at this time was reduced to 30 per cent. and her condition seemed very critical. On February 23 there occurred suddenly, without the patient's being aware of it herself, a great protrusion of the left eye with a rapidly forming edema of the lids (Fig. 28). Ophthalmo-

scopic examination within a few hours showed a multitude of retinal hemorrhages, and in a few days the entire eyeball became so opaque that examination of the fundus was no longer possible. Evidently the long-awaited thrombosis of the cavernous sinus had taken place and the pack could be removed with safety. This was done on the following day, with no resultant bleeding whatever. It seemed useless to attempt to save the eye. There was total and probably permanent loss of vision; long compression had paralyzed the oculomotor muscles; all the transparent structures of the globe were clouded, and there was a most unsightly exophthalmus. From this time on improvement was rapid, and the patient's hemoglobin in 14 days increased from 30 to 73 per cent. On March 6 the eyeball was enucleated.

Late Result.—Letter; one year. "The patient is at home, well, at work, has had no neuralgia and has gained 20 pounds in weight, and regards the loss of the eye as a small price to pay for the freedom from pain."

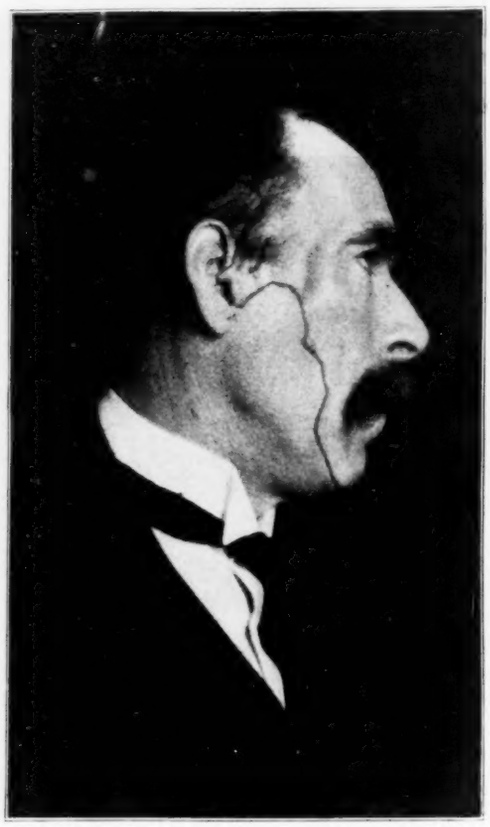

Fig. 27.—Case 13. After one year. Area of tactual anesthesia (for comparison with Figure 25).

It is lamentable that among the women, in this series of cases, the most vexatious complications have arisen. I have attributed this to the fact that they have been, with one exception, left-sided cases, and not only is there greater risk of cerebral complication from compression on this side, but also, for me at least, the operation on the left has been less easily conducted. So far as I am aware, the sequel of a cavernous sinus thrombosis has heretofore never been recorded, although many have believed that they have injured the vessel during the operation. Cases of non-septic thrombosis also, from whatever cause, must be exceedingly rare. The mechanical result of the stasis was the counterpart of that seen in the less uncommon infective cavernous sinus thromboses but without the serious clinical manifestations accompanying the latter condition.

CASE 15.—Mrs. R. T., aged 52.

History.—This was a left-sided case and proved to be a complicated one. She had had a severe neuralgia for several years, which had originated almost simultaneously in the second and third divisions. She spoke of her paroxysms as a "red-hot sawmill" operating on her face. She was a frail and nervous woman, a very unfavorable subject, in whom it may have been a mistake to have attempted a ganglion extirpation, but it had been seriously urged by her physician and friends. Aside from the extraction of her teeth and the usual run of therapeutic measures commonly advocated, she had undergone no previous operations. Her mental condition was unbalanced; she suffered from delusions of persecution, and had very little sense of orientation. Only within a few months had the paroxysms spread into the supraorbital region. There was a considerable degree of arteriosclerosis.

Operation.—April 27, 1903; ether. The case was a very difficult one from the start, the patient's blood pressure registering, as it did, in the neighborhood of 300 mm. of mercury even under normal conditions, was probably responsible for this. Every step, from the first skin incision, was associated with bleeding, which was controlled with difficulty. The diploe bled freely, necessitating the use of wax after al-

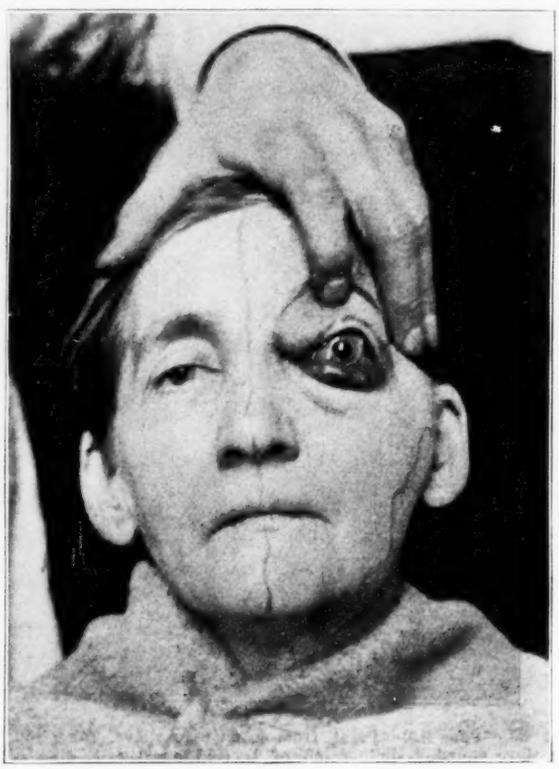

Fig. 28.—Case 14. Photograph March 1, after thrombosis of the cavernous sinus.

most every bite with the rongeur forceps. After partially exposing the ganglion, it was determined to pack and to postpone the operation for 48 hours. This was the first and only case in this series in which it has been necessary to do this. Adrenalin was used locally with absolutely no appreciable effect in checking the bleeding. The wound was packed; a stuporous condition from compression, with a "jargon aphasia," was present for two days, while awaiting the second operation.

Second Operation.—April 29, 1903. Under better auspices and with a better light, the operation was carried through to a successful termination. Some bleeding was occasioned, chiefly in the neighborhood of the second division, where a vein passing through the foramen ovale was torn. This, however, was easily controlled. Adrenalin again was employed, with no apparent benefit. The wound was drained.

Postoperative Notes.—Her aphasia completely disappeared a few days after her second operation. There was a slight

temporary palsy of the oculomotor nerves. Otherwise her convalescence was uninterrupted and she returned to her home in the South apparently very much improved in her mental condition and free from pain. She died seven months later, as I have learned from her sister, of some intercurrent affection.

(*To be continued.*)

AN IMPROVED X-RAY FOR THE STUDY OF BONE INJURIES AND FOREIGN BODIES.

G. H. STOVER, M.D.
DENVER.

A brief consideration of some of the fundamental principles underlying the use of the *x*-ray in diagnosis is somewhat necessary for a full understanding of the reasons for the superiority of this method over the one commonly in use.

The *x*-ray or Roentgen ray is a form of energy originating at the target of a Crookes vacuum tube, generated by the impact of energy from the negative terminal or the cathode. This energy proceeds divergently from its point of origin; it becomes feebler with increasing distance of travel, and it can not be refracted nor reflected from its course. It is said by some that a "diffusion" of rays takes place when passing through bodies of certain density or thickness, but I do not fully subscribe to this; the diffusion of the rays is said to be the cause of lack of clearness in skiagrams of thick parts. My own belief is that this lack of clearness is due to rays formed on the walls and metal parts of the tube other than the target, and that these rays, proceeding in different lines from those originating on the target, during the longer exposure demanded by thick parts, also affect the sensitive plate and thus blur the image.

For the diagnostic use of the *x*-ray there are two principal methods—fluoroscopy and skiagraphy. Fluoroscopy is a rather rough and inexact method as compared with skiagraphy. Both are made necessary by the fact that the *x*-ray does not cause a visual sensation in the retina; therefore, we must use accessories to render the effect of the *x*-ray visible to us.

In fluoroscopy a chemical screen is used; this is a surface coated with a chemical which will fluoresce or glow with light when acted on by the *x*-ray. There are many of these substances, most prominent being the tungstate of calcium and platinum barium cyanid. Tungstate of calcium reacts with a beautiful white light, but has the disadvantage of being somewhat phosphorescent; that is to say, it continues to react for a little time after the *x*-ray has been cut off, so that it is less useful in fluoroscopy than as an intensifying screen. When used in the latter manner it is inclosed in the holder or envelope with the sensitive plate, the chemical side next to the plate; it greatly shortens the time of exposure, but it causes a granular appearance in the developed plate, and in these days of extremely powerful machines, exposures are normally so short that a screen is not needed.

The platinum barium cyanid screen is almost exclusively used in fluoroscopy, as it is not so good an intensifying screen as the other.

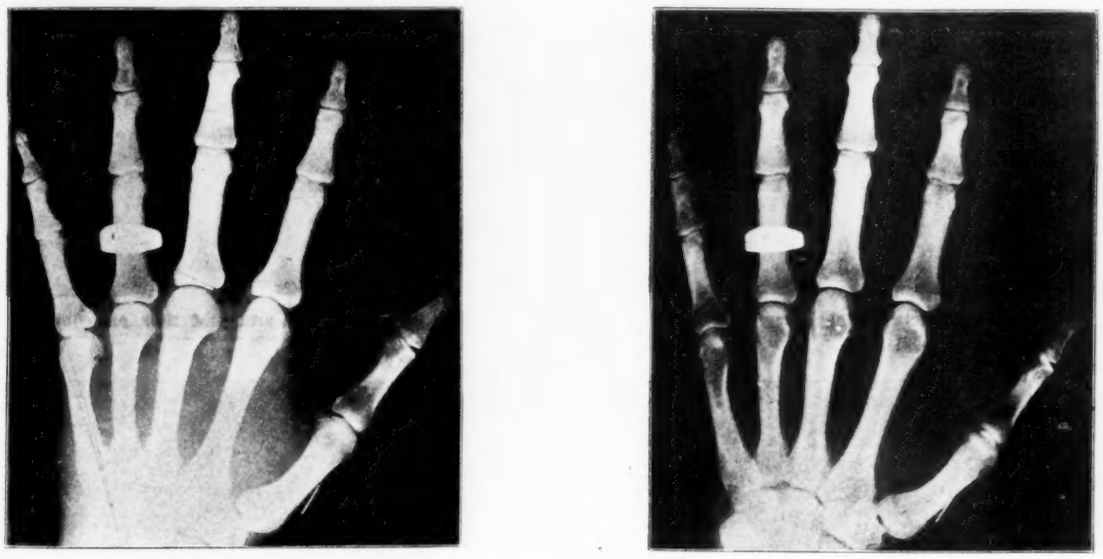

Fig. 1.—Stereograph of a piece of a needle in the hand. These may be viewed through a stereoscope or by the method described at the conclusion of the article.

The results of fluoroscopy are very much less accurate than those of skiagraphy; many details are lost on account of the uneven surface of the screen. Its less delicate sensitiveness, as compared to that of the photographic plate, and its own imperfections are accentuated by the limitations of the human retina, which at its best is well known to be unable to record light effects as well as the sensitive plate, and still less so when working under the trying light of the fluorescent screen. The skiagraph gives us more than a shadow; it shows structural detail that the screen fails to record, and, most important of all, it is a permanent record that can be studied at leisure, and which can be preserved indefinitely. This latter feature will be found of great value in watching the progress of bone repair after injuries and during treatment, in proving the existence of lesions and their correction.

When it is possible to obtain the services of a competent skiagrapher, no physician can afford to neglect the

information given by the *x*-ray. By this means he sees the nature and extent of the injury, and if replacement is correct and dressings sufficiently retentive.

The time is close at hand when failure to use this means in the treatment of fractures and dislocations will be evidence of neglect and incompetent treatment.

In medicolegal complications, a technically correct and legally complete skiagram will often prevent expense and other injury to both parties of possible suits; the mere fact that the physician had insisted on an examination by the *x*-ray would show that he had exercised due diligence in his handling of the case.

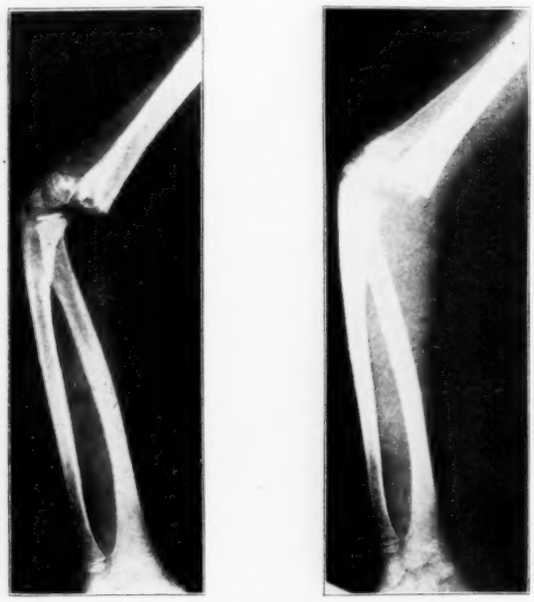

Fig. 2.—Fracture of humerus in a child.

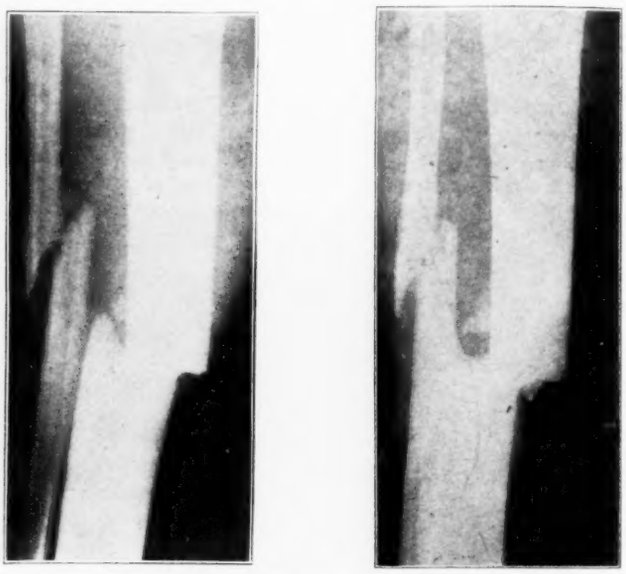

Fig. 3.—Fracture of tibia and fibula.

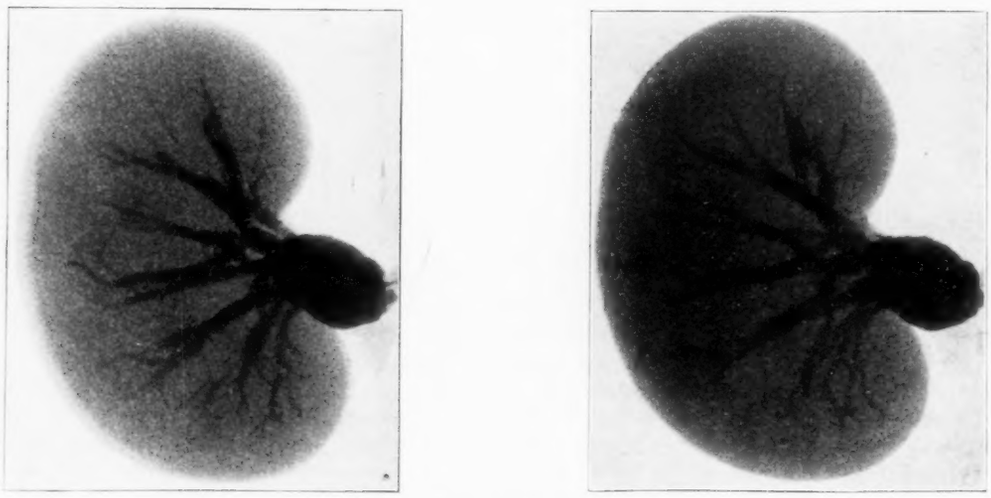

Fig. 4.—Injected kidney of sheep.

In the skiagram as usually made, we get information, mainly, of but two dimensions of the object, these dimensions being of planes more or less approaching a parallel with the surface of the plate; but of the third dimension, or of the dimension in planes vertical to the surface of the plate, we get practically nothing. It is true that one who is thoroughly familiar with the interpretation of negatives does get some knowledge from them of these other planes, but it is not sufficiently exact to be greatly relied on. For instance, in the case of an oblique fracture of a long bone, with the plane of cleavage lying more or less parallel to the surface of the plate, the expert can often tell by certain features of the image which fragment has its fractured end nearest the plate.

Examine a skiagram showing a needle in the hand; the needle is plainly to be seen, but the skiagram does not tell if it is nearer the palmar or the dorsal surface, nor where it lies in the intervening space.

In an anteroposterior skiagram of a fracture of a long bone, the lateral relationship of the fragments is shown but not the anteroposterior.

In locating foreign bodies, it has been necessary to place several metallic markers on the skin, to take two skiagrams, and then to go through an elaborate mathematical and geometrical computation in order to get exact data, and in many fracture cases it has been necessary to take two skiagrams at right angles to each other,

For the process here described two skiagrams are needed, but the remainder of the examination is much simplified. Only exceptionally are markers needed,

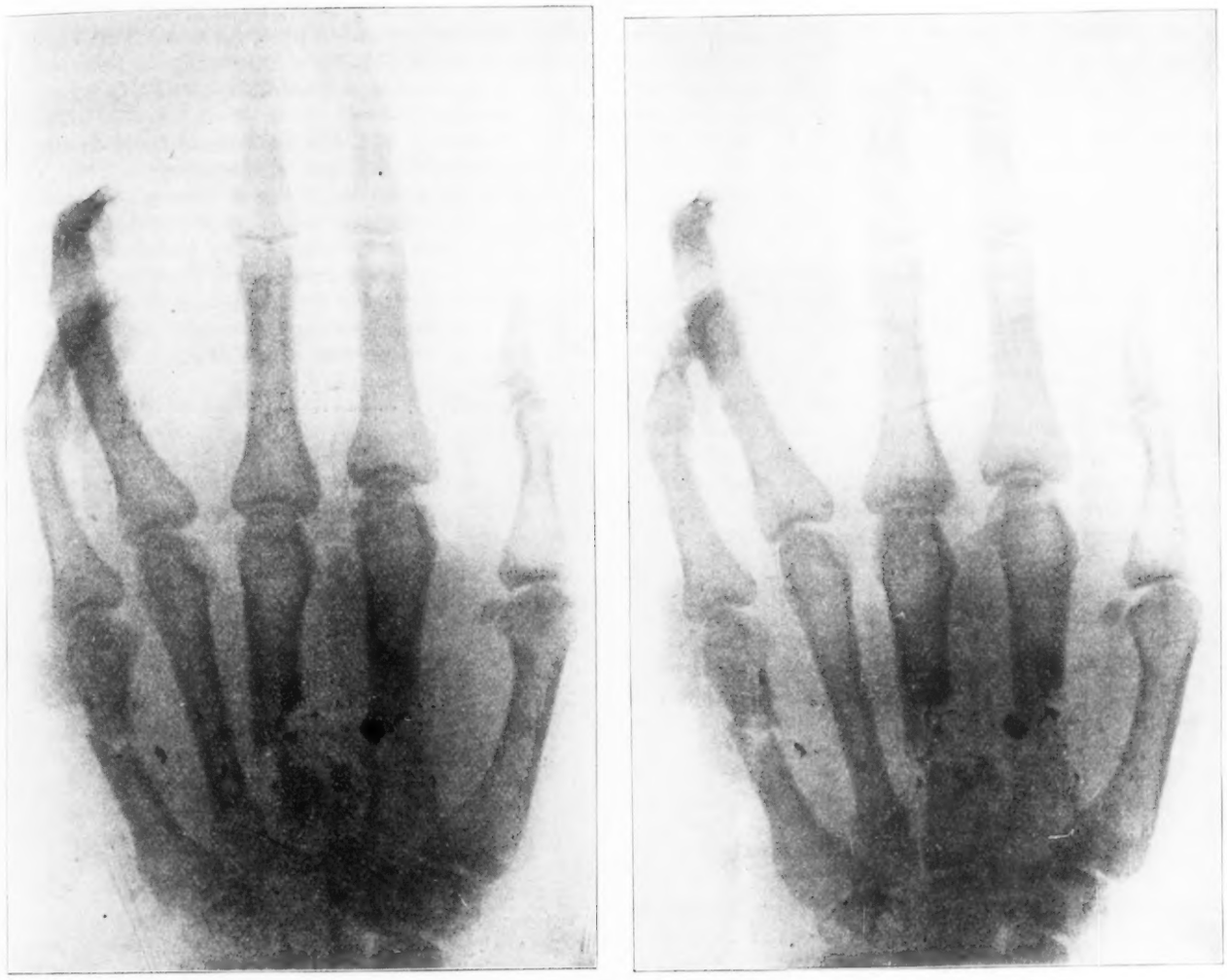

Fig. 5.—Gunshot wound of hand. View of palmar side.

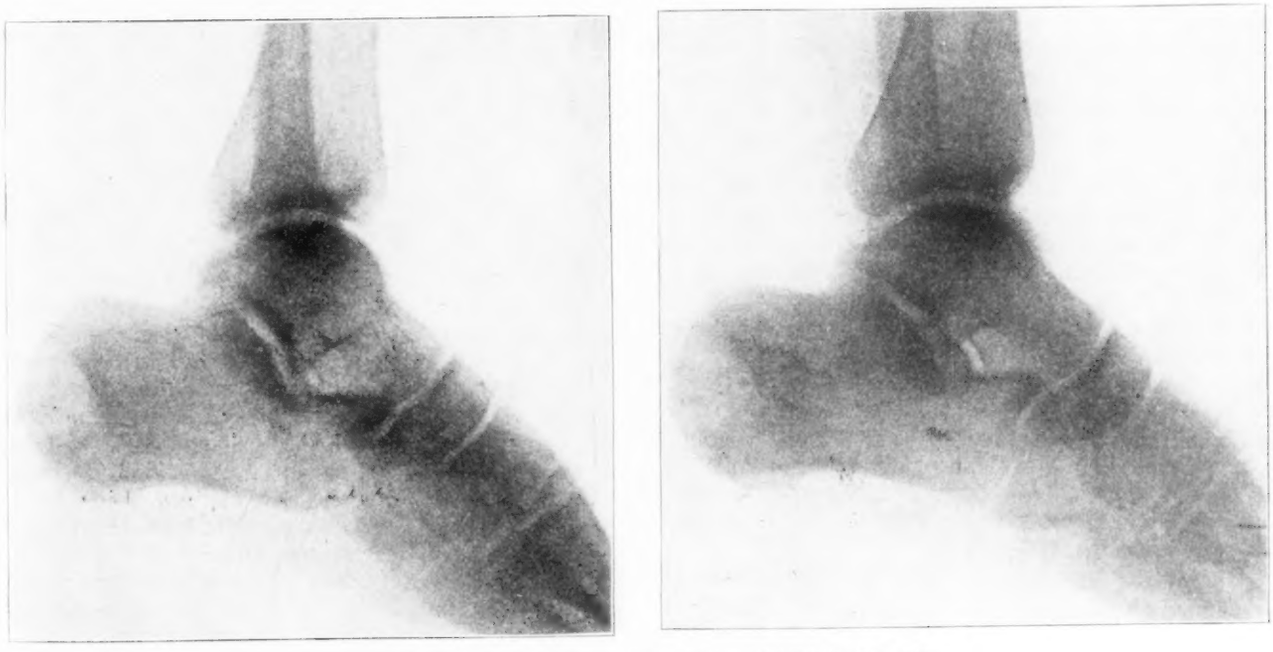

Fig. 6.—Cavity in os calcis. Pieces of lead in the skin.

and then but one. It is not necessary to study separately two skiagrams taken from widely different points of view, and then to coax them to give a mental picture of the real condition.

In this improved methed, both pictures are combined into one, giving a view of the parts almost as definite as if they had been stripped of all impeding tissues; or better, that the flesh and other tissues which defy unaided eyes are made to serve as landmarks in the steroscopic skiagram—or as I prefer to call it, the radio-stereogram.

I do not claim any priority in this matter at all, though I do believe myself to have been one of the very early workers in this line. Some of the Denver men will remember a radio-stereogram which I showed a few years ago; it was the skiagram of a ball of wrapping twine into which I stuck a number of pins in different directions. That was my first; my second was a sheep's kidney, whose vessels I injected with plaster of paris. The picture shows the branching of these vessels very well, and I think that it gives us a hint of a fine method for the study of the circulation of various internal organs.

It is not necessary for me to dilate on the advantages of this method, as I think it will be at once apparent to all what an advance we have here. All physicians are familiar with the stereoscopic views which used to be so popular, and how much better an idea they gave of the relations of different objects in the picture to each other than did a flat picture of the same scene; and it is the same with the radio-stereogram; instead of a flat view they gave a relief effect with full perspective.

As to the technic, a plate-holder so arranged that a plate in its light-proof envelope can be inserted, withdrawn and another inserted without disturbing the patient, who is placed on it, is quite necessary.

If there are no good natural landmarks near the part to be examined, a metallic marker may be placed on the skin, its location being indicated by indelible ink or nitrate of silver; in looking for a needle do not use a piece of straight wire as a marker, and if a bullet is sought, do not use a metallic disc, for very obvious reasons.

The tube is hung from a graduated support; a point on this support is found, that is in a line perpendicular to the plate and passing through the center of the object to be examined. The tube is now placed so that the anode is a certain distance, varying according to the thickness of the part, to one side of the base point already selected on the tube support; an exposure is made, the plate withdrawn from the plate-holder, and another plate inserted. The tube is then moved so that the anode is on the other side of the base point of the support a distance equal to its former distance form it on the opposite side and another exposure is then made.

For examination, the finished plates are placed in a suitable light, side by side—there is a right and left in this arrangement—and they are then examined by means of a special stereoscope. I use plane prisms of twelve degrees, with bases out; an ordinary parlor stereoscope will not do at all.

In looking at the skiagrams, the attention is concentrated on the center of the picture, and the observer is rewarded by a view of the parts that gives their true perspective. There are other means of examining these negatives, but I think this is the simplest.

I have reduced some of my radio-stereograms to such a size that they may be viewed through the ordinary parlor stereoscope, and I present them herewith for inspection. Naturally, they have suffered some loss of detail in the process of reduction, but I think they will convey my idea.

By diverging the eyeballs these radio-stereograms may be examined without a stereoscope. This feat is performed by attempting to look through a point midway between the negatives or prints, and focusing the eyes for a distance far away. The pictures will gradually merge into the stereoscopic view when the proper degree of divergence is attained, and the trick will be found a very useful one in this work. Details will appear after a few seconds which are not noticed at the first glance.

SHOULD INEBRIATES BE PUNISHED FOR CRIME BY DEATH?*

T. D. CROTHERS, M.D.
HARTFORD, CONN.

The severe criticism by lawyers and judges of medical expert testimony is often based on facts and is not altogether unjust. Physicians in the witness stand are often very stupid, and give strained interpretations of scientific facts, mixed up with opinions and theories, which give rise to a suspicion of hazy, inexact ideas, or of some personal motives. Such testimony concerning the mental condition of inebriates who have committed crime is still more confusing and doubtful. Physicians who are generally clear on other matters in their everyday life, particularly relating to questions of cause and effect, hesitate and are confused when called to describe the mental condition of persons continuously poisoned by alcohol. The toxic effects of alcohol on the organism seems to be a matter of uncertainty, but when in place of the word alcohol, arsenic or mercury is used there is great emphasis and clearness of statement. The injurious effects of alcohol are very common, while that of mercury and arsenic more or less is rare. The one is invested with delusions and stupid theories, the other is not. If with the history of inebriety is associated a neurotic ancestry, bad surroundings, irregular habits of living and occupation, why should the expert physician be in doubt as to the degree of injury and damage which the brain has sustained from the use of alcohol combined with these agents? Why should the possibility of mental soundness and capacity of control be considered in persons with this history, and how utterly farcical is the attempt to draw dividing lines where health and disease join, or where mental strength and degeneration separate? During the past year over one hundred inebriates have been tried and punished by death for capital crime, and the question of responsibility and the degree of sanity present was the subject of controversal testimony among a large number of medical experts. The results of these trials indicated the profound failure of both courts and medical witnesses to understand the pathology or psychology of these poor victims. Literally, the questions of sanity and responsibility turned on the credulous acceptance of erroneous theories of the effects of alcohol on the brain. The dogmatic assertions that inebriety could not excuse nor lessen the responsibility of

* Read in the Section on Nervous and Mental Diseases of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904.

crime, and that any toxic states before and during the commission of the act increased the culpability, were accepted by medical witnesses as if they were exact facts. Also the still more incomprehensible classification of intoxications into voluntary and involuntary forms in which free will and judgment to discriminate were present, was repeated as scientifically true beyond question. Another assumption prevailed and was unquestioned by the medical witnesses, viz., that the question of motives and the consciousness of conduct in one poisoned by alcohol could be traced with as much exactness as a stream of water is followed back to its source. The absurdity of calling states of mania or melancholia voluntary or involuntary acts and the efforts to show their boundaries and limits appeared in the testimony of several experts.

Going further, they declared that the use of alcohol was a mere habit to be put on and off at will and that at no time was the consciousness or power to discriminate concerning the nature and consequence of acts lost entirely. In one instance an expert swore that the prisoner was sane and responsible at the time the act was committed, although he had drank to great excess for years and had had many attacks of delirium, one within two weeks of the time of the commission of the crime. He also had delusions that he was to be killed by persons who wished to drive him out of the community. In another case an expert gave similar testimony where the prisoner had drink paroxysms for ten years, dating from a sunstroke, and during these paroxysms he was maniacal and destructive. In other instances similar histories of long-continued use of spirits and of pronounced toxic states were given, and the possibility of such persons being sane and responsible was so remote that it is difficult to understand why it even should be considered. The efforts of courts and attorneys to judge of crime and criminals where the toxic causes are alcohol, based on medieval theories of the operations of the brain, are common, but why physicians should accept such theories and conclusions that are literally opposed by all scientific studies is, to say the least, very startling. Nothing seems more clear than that crime, criminals, insanity, inebriety, idiocy and many other forms of degeneration are all results of distinct causes, the origin and growth of which is becoming more and more apparent with every advance of exact knowledge. Theories of moral causes in inebriety, such as that tendencies and impulses are under the control of the will at all times, are unknown and are opposed by scientific studies. The inebriate whose use of alcohol may be a symptom as well as an active cause, is diseased and has a defective brain, with a defective power of control, no matter what the appearance may be. The reality of the disease is apparent in the failure of the use of moral means and remedies, such as punishment, ridicule, persecution, suffering and loss, which make no impression and which in no way check its progressive march. If there was sanity, normal control and consciousness in the inebriate's state, those means would prevent inebriety, but the fact that they increase and actually develop the favoring causes and conditions is an indication that the degeneration is physical and not moral. The inebriate is practically less able to control or to judge the nature and character of his acts because of his defective senses and general poisoned condition. Alcohol has paralyzed both the organic and functional activities of the body, and impaired his ability to adjust himself and to understand the constantly changing conditions. The irresponsibility of the inebriate from the defective organism is confirmed by the modern studies of the physiologic action of alcohol on the brain and nervous system. No matter how it may be used, its effects are practically the same, only varying in degree. First, the action of alcohol is on the vasomotor nerve, disturbing the vascular circulation, both increasing and diminishing the flow of blood to the brain and to the surface of the body; second, the nutrition is disturbed, the oxygen-carrying properties are diminished and the toxins are increased and the vitality is lowered. The blood vessels are incapable of uniformly furnishing the proper nutrient supplies, and the supply itself is diminished in both quality and quantity. Every dose of alcohol disturbs and lowers the elasticity of the arteries, particularly in their terminals, and the normal rhythmic flow of blood essential to health is broken up. These changes are registered in the increased heart's action, vasomotor palsies, and surface congestions. This impairment of the arterial circulation is registered in the derangement of the senses, which can now be measured with great exactness. Alcohol impairs the sight, diminishes its color sense and power of discrimination; the hearing is lessened, and the co-ordination of sounds is disturbed. Both taste and touch are defective and the consciousness of the external world coming through these sources is perverted. This particular derangement of the impressions from the outside world through the avenues of the senses most seriously affects the power of reason, because such impressions are faulty and the data which they furnish misrepresents the real conditions. The brain is incapable of correctly judging of the surroundings, of the consequence, and of the nature of acts. This faulty condition of the senses extends to organic impressions within the body. The anesthetic effects from spirits promote delusions of strength and vigor, hence the inebriate never realizes the actual conditions and constantly misinterprets the impressions within the body. The co-ordinating centers and so-called consciousness of the higher relation of events are palsied, hence delusions, illusions, deliriums with stages of mania and imbecility appear from the use of spirits. These are noted in the later stages of mental disturbances which begin with the first use of spirits. The changed conduct, faulty reasoning, and emotional instability seen in inebriates is frequently an evidence of the advent of paralysis. Often these palsied effects concentrate either on the motor, the mental or the sensory centers until finally judgment, experience, duty, obligation and power of discrimination are confused or lost. The supposed clearness and activity of the mind does not represent the real condition, and is often the struggle of the co-ordinating centers to adjust themselves to the new conditions and surroundings. The appearance of health is a mask, and the organic activities of both brain and body become more and more automatic. The mind is cut out from the main circuit and does not act from the data of the present. General loss of memory, coming on suddenly and extending over a period of time, during which crime may be committed, is treated with contempt by the courts and regarded as a subterfuge and excuse for the acts committed. Many inebriates executed for crime claim that it was committed without the slightest recollection or consciousness of what they were doing. Testimony to determine the reality of this condition is seldom offered. In a study which I made some years ago of these amnesic trance states it was found to occur very frequently, and its reality did not depend on

the statement of the prisoner. The general conduct and automatic character of the act committed, together with a general history of continuous toxic states, made it clear that many crimes were committed in this condition, where the degree of responsibility was entirely absent. Many of these persons had a history of epileptoid impulses and explosions with concealed or open delusions, which were overlooked as of minor importance. These are some of the pathologic states common to inebriates, particularly those who have committed crime, and who have reached chronic stages of degeneration. The conclusion can not be doubted that irresponsibility and mental failure not only to control but to judge of the relation of acts and of the surroundings is present in all chronic inebriates. Looking at this subject from another point of view, it is evident that the legal theory that inebriety is no excuse for crime and the punishment based on this theory as a deterrent and remedy for its cure and prevention is a stupid blunder, and contradicted by all experience and statistics. In the lower courts, where toxic states from alcohol and mild assaults come into recognition, the efforts to cure by fine and imprisonment not only increase the disease but make the victim more incurable. Different studies of victims punished in the lower courts show that less than 1 per cent. received any benefit. Each effort to check these toxic states is literally a form of education increasing the debility, lessening the control and precipitating the victim lower and lower; thus the inebriate and pauper criminals are cultivated by the blundering efforts to prevent and to cure this condition. Of the hundred inebriates executed last year over 70 per cent, had been punished in the lower courts for minor acts, and the final culmination in capital crime was the natural consequence of a series of events which could have been predicted and which was almost certain to follow as the natural result from distinct causes. In one case, from the beginning there was continuous anesthesia and palsy of the higher brain centers and of the sensory activities, which went from bad to worse, making the victim more and more unable to understand the nature and consequence of acts. Notwithstanding this experience, the same methods are pursued and the same reasoning followed, that intimidation, fear and suffering will give some new power of control not exercised before. The same theories prevail in the higher courts, where the death penalty is supposed to check the use of alcohol and to prevent persons from committing crime while under its influence. These legal fictions are stated so emphatically that the thoughtless experts credulously accept them as true, actually believing that crimes committed while suffering from the toxic effects of alcohol may be, and are, the voluntary acts of sane minds. When the absurdity of this premise is pressed, the answer is that the mind was sane at the beginning and knew the consequences following the use of spirits. Another legal fiction has been accepted as an exact fact, that evidence of premeditation in the act is an indication of normal reasoning in the inebriate. Still another legal fiction is prominent in the supposition that a purpose or motive previously formed could be conceived and materialized in a brain continuously clouded by alcohol. And, lastly, the most astonishing blunder is that of attempting to point out fixed periods in the operations of the inebriate's mind where sanity and responsibility joined insanity and irresponsibility. In one instance a prisoner had been arrested many times for sudden, unprovoked assaults, evidently the result of concealed delusions, yet the medical experts could not find evidences of an unsound brain. His volubility and the clearness of his statements seemed stronger proof of his sanity than years of insane conduct. Another patient, after ten years of the most irresponsible thought and acts, committed an atrocious crime, and in jail explained his conduct and gave reasons and talked so clearly and well, that he was convicted at once as sane and responsible. He was apparently converted and spent the last days of his life in warning others to avoid the use of spirits. This was literally concealed paresis. Another man, whose crime was sensational and whose previous life had been one of continuous alcoholic paralysis, was indignant that a defense should be made of insanity, and denied that he was irresponsible. The court accepted his statements and treated with contempt the efforts of medical experts to show the insanity of the man. These examples are common and indicate the dangerous and thoroughly futile efforts to discriminate and to point out degrees of sanity and rational appreciations of the surroundings and the consequence of acts by inebriates. Society, as well as human justice, suffers by these unreasonable efforts to punish and to destroy chronic inebriates for wrong doing. Society has no right to permit defectives to grow up unnoticed, and to be educated to acts of violence and destruction, and then to hold them responsible and to punish them as sane. The inebriate murderer should never be put on trial in public, and the farcical question of his sanity and responsibility made the subject of public discussion. One great fault at present is the failure and hesitation of the medical profession to defend the teachings of science, particularly when these are opposed to the theories of courts and to the delusions of the present.

Some of the conclusions which the scientific studies of the present make prominent may be stated as follows: First, the present legal treatment of inebriety and the efforts to apply preventive and deterrent remedies is a failure.

Second, science has proved beyond question that the action of alcohol is an anesthetic and depressant, and that its continuous use is followed by sensory and motor impairments, and also by poisoning and starvation of the brain and nervous system, hence sanity and responsibility is not possible.

Third, the object of the state, through the law, to prevent crime and to protect society from criminal inebriates by dealing with them as sound and responsible, fails in every particular.

Fourth, the fear that the plea of insanity in crime and the failure to inflict punishment is an excuse and encouragement for crime, is opposed by all statistics and experience.

Fifth, the inebriate should never be punished by death, for crime committed under the influence of alcohol, because he is not mentally sound. Such punishment surrounds the criminal with a contagion which leads other defectives to repeat these very acts.

Sixth, the question of responsibility in inebriety should never be made the subject of medical controversy.

The fact of excessive use of alcohol should be accepted as evidence of mental impairment and of inability to control acts and conduct. The medical examination will show this impairment, and the patient should be committed to institutional care and treatment. Physicians called to give evidence of the sanity and responsibility of inebriates should give their views entirely from the facts

of the neurotic heredity with the spirit and drug history. The more thoroughly these are known the more accurately conditions of the brain can be determined. The question is one of cause and effect; not of theory nor of legal dictum, but of actual fact, with the legal application of which the expert has no concern.

DISCUSSION.

DR. BROOKS F. BEEBE, Cincinnati, stated that many medical witnesses are not medical experts. They do not know the subject, and yet their testimony will go for as much on the witness-stand, often, as that of Dr. Crothers himself, simply because the laws have been made through ignorance and not on a scientific basis and, therefore, are altogether wrong. There is no question in the medical man's mind as to when an individual is responsible and when he is not. The line is clearly drawn, the difference being one of habit or disease. One individual goes out and takes one glass of whisky or two glasses of whisky and stops as he chooses; in the other case a man takes one glass of whisky and he can not be prevented from going on a spree. They may have an equal amount of knowledge, but not of will power. If it is simply a bad habit, the man is responsible for taking the alcohol and for all its consequences. On the other hand, if there is lessened will power, disease exists to that extent and irresponsibility follows. The method of punishment of these alcoholic criminals is all wrong. In Cincinnati the cases are tried in a police court. A man goes on a little drunk and is sent up to the workhouse for 30, 60 or 100 days. He comes out and in a very short time goes on another spree. When a police officer was asked what proportion of them returned, he said that more than two-thirds of them were sent to the workhouse more than once, many flitting from one to the other for years and years. If responsible, as some of them probably are, they should be sent to the workhouse, but doubling up the time with each new arrest, giving them 60 instead of 30 days, 120 instead of 60 days, and so on. Old offenders should spend part of their time in the workhouse being treated for their diseases—medicinally and otherwise—part of the time being spent in working for themselves and for their families, and in this way they may get back into a healthy condition. It is not a question of punishment altogether. It is a question mostly of curing the disease. Certainly an individual has no right to walk the streets and do harm; certainly the public has a right to be protected, but the state is in duty bound to take care of an individual in the proper manner. The state owes a duty to the criminal in more ways than one; to take care of him and of his children. Such people have no more right to marry and to propagate offspring than have the tuberculous or people with any other diseases, and the state should look after those cases also. Let physicians help to make laws permitting no one to marry unless he has a certificate of health and good character. The prevention of crime will be accomplished more readily by preventing propagation of the species than by punishing irresponsible diseases.

DR. S. M. CROWELL, Charlotte, N. C., said that physicians as well as the laity are too prone to look on these diseases as loathsome habits which do not need scientific consideration. The city recorder of Charlotte said that he was thinking seriously of forming a bill to be introduced in the next legislature to provide a treatment for these cases. Under its provisions, instead of sending a chronic case to work on the county roads, he would sentence him to a county sanatorium provided by the state legislature. Then, after a proper course of treatment, if the case should again appear before him for a similar offense, he would consider punishing him in some way.

DR. ALBERT E. STERNE, Indianapolis, declared that if the first law of nature is the preservation of liberty, then the punishment of the chronic alcoholic for crime is against natural law. Is not the mere fact that the person is satisfied and is willing to spend three-fourths of his life in prison *prima facie* evidence that the reason and judgment of the man is at fault? The mere fact that he goes to prison time and again and is released only to be sent back again within twenty-four hours shows that it is not a habit and that the man is mentally unsound, that he possesses no judgment and exercises no judgment. That man is sick; he needs treatment; he needs to be incarcerated in a place where he will be treated, not where he will be surrounded by influences more deteriorating than those from which he was removed. A bill was introduced into the Indiana legislature two years ago, which was lost because the man who introduced it proposed to levy a tax on druggists selling liquor, morphin and opium without the prescription of a regular and practicing physician. Of course, the druggists got together and immediately put down that bill. Now there is another one which will come up at the next session to establish a hospital for inebriates. The city hospital is the place for the acute cases, just the same as for any other acute disease.

THE MUSEUM IN MEDICAL TEACHING.

MAUDE E. ABBOTT, B.A., M.D.
Curator of the Pathological Museum, McGill University.
MONTREAL.

The stress and the high pressure of modern life is felt nowhere more keenly than in the field of higher professional education. On all sides the demand is heard for a wisely simplified curriculum, for a longer term of study, for methods that will bring the ever-widening field of knowledge to be covered within the range of the personal observation and induction of an ever-multiplying number of students. To meet the difficulties of the case, educational reforms have taken place all along the line. Teaching is becoming always more objective, illustrative, the didactic method more colloquial—socratic. The student is called on to produce, even more than to acquire, to enquire, to debate, and to himself form judgments on the facts of his own observation. The laboratory system, in short, with the symposium, is replacing the lecture room and the thesis.

Nowhere are these new methods of teaching carried further than in America, and yet it appears to me that it is on this continent that the remarkable adaptation of the medical museum to this colloquial form of objective teaching is, perhaps, least understood.

In this paper I will first present the important place which the museum should and can fill in medical teaching; and secondly, I will try to show how a well-organized, well-classified museum evolves itself as a teaching mechanism of great value; presenting also the methods in use in the pathological museum of McGill University which, although still almost in their beginnings, have proved successful in developing it along these lines.

THE MUSEUM IN MEDICAL TEACHING.

In this connection Professor Huxley has said: "Without doubt there are no helps to the study of biology, or rather to some branches of it, greater than our natural history museums; but, in order to take this place in biology they must be the museums of the future. The museums of the present do not by any means do as much for us as they ought." And again: "To all those who intend to pursue physiology, and especially to those who intend to employ the working years of their life in the practice of medicine, I say there is no training so fitted, or which may be of such important service to them, as the thorough discipline in practical biologic work which I have sketched, as being pursued in the laboratory hard by."

I have come on a most interesting article, "Museums as Educational Adjuncts to Medical Colleges," a graduating thesis by M. Josiah Roberts, which obtained hon-

orable mention in the medical department of the University of New York in 1882. This paper deals with the whole subject of the formation and functions of natural history museums, and in one section says so succinctly and so exactly what we have found true in the work in our own medical museum at McGill that I quote from it fully. Mr. Roberts says:

"How can the museum thus collected be made most useful? I would answer: Use the material thus collected as the basis for a course of museum laboratory instruction which will train young minds to do accurate observational work, thus developing the three great functions of the intellect, discrimination, agreement and retentiveness, while at the same time increasing the extent and diffusion of biologic knowledge. The true functions of our medical museums, in addition to providing for public instruction, should be to afford facilities for a course of instruction which will give medical students the opportunity to personally observe facts, and the impressions which will follow will be clear, definite, permanent, and hence far more valuable than any plagiarized information taken from books. If this kind of training, which it is so desirable that every medical student should have, can be obtained by a graded and systematic course of observational study on these forms, a knowledge of which has a direct practical bearing on the professional duties for which he is trying to fit himself, I think the evidence is *prima facie,* that the time is now ripe when at least the first tentative step should be taken toward its realization."

Mr. Jonathan Hutchinson,[1] in a descriptive sketch of his "Clinical Museum," says: "I venture to assert that I can give to anyone who will go round these rooms with me and inspect the associated series which are devoted, for example, to injuries of the head, rhinoscleroma, etc., far clearer and more definite views in the course of ten minutes than could be gained by a week's reading."

To the above quotations may be added the fruit of our own experience during the past few years in the pathological museum of McGill University. Of this I would say, and I can not speak too strongly, that, given a medical museum with a good material on its shelves and in storage, a good system of classification, and an active medical officer in charge, and the conditions are presented for a laboratory system of great scope and of remarkable efficiency. Here facts, showing the thousand gradations and variations of disease, are presented in their correlated order, or in sharper contrast, at first hand to the observation of the student. His native powers of observation, judgment and induction are at once elicited; he obtains a new understanding of what he has read of and seen elsewhere, and a keener enthusiasm for his work at the bedside. And this gain of knowledge, or insight into disease, is acquired without a strain on his memory, but rather with the mental relief which comes from seeing in their simplicity conditions the abstract ideas of which it has required often a powerful effort to carry in his mind. The organized museum is to general pathology what the autopsy room is to medicine, what dissection is to anatomy, what—to go further afield—traveling to see new countries is to the study of geography.

It is in the presentation of series of specimens in an ordered sequence that the strength of the museum system lies. Professor Virchow, writing at the opening of his own great museum in Berlin in 1901 of this teaching by means of large numbers of museum specimens illustrating allied and differing pathologic conditions, expressed the object attained in these words: "Thus will the student prepare himself for the difficult art of forming for himself out of the confusing many-sidedness of pathologic appearances, a general idea of a diseased process, even in those cases in which direct observation is impossible."[2]

THE SYSTEM IN THE PATHOLOGICAL MUSEUM OF M'GILL UNIVERSITY.

The collection of this museum was begun in 1821 when the medical faculty itself was organized. Ever since that time it has been a cherished object of the teaching staff, who have always used it largely in illustrating their didactic lectures. It thus contains a rich material, which has of late years been increased quite one-third, by the efforts made to fill in the gaps in the teaching series.

During the past few years much active work has been done in this museum. It has been carefully reclassified and recatalogued on a set of descriptive catalogue numbers, after a plan similar to that of the Dewey decimal system of classification in use in libraries. Especial care has been taken to preserve the natural colors of organs by the methods of Kaiserling and Jores, and specimens are carefully mounted on glass frames so as to preserve their anatomic relations, and to show the pathologic lesion to the greatest advantage to the student. And a curator is on duty whose especial function it is to develop the museum as a teaching organ and to fill in gaps in its teaching series by representing the specimens needed to the pathologists of the two great city hospitals, a curator who also has ample time to place at the disposal of the students.

Under these conditions the usefulness of the museum to the students has developed beyond the expectations of those engaged in the work. It has already become a self-teaching mechanism, the possibilities of which as a supplement to both clinical and postmortem work are almost unlimited.

THE GENERAL ARRANGEMENT OF THE MUSEUM.

The museum proper now consists of a suite of four rooms communicating with the curator's office and a large lecture room used by the professor of pathology for his lectures on that subject. Of these rooms, the largest and best lighted is the one in which the majority of the moist specimens are kept. It is supplied with a number of large tables fitted with movable shelving, which are used for demonstration and exhibition purposes, or, with the shelving removed, for the writing of descriptive exercises. Of these tables, the largest runs down the center of the room, and is fitted with a double tier of two steps so that a set of three shelves is presented on either side. This table is the one used for the routine demonstration. The others have a single tier of two steps each.

Of the other museum rooms, one is devoted to the osseous system, one to the female generative system (the obstetrical and gynecological museum), and one to the medicolegal collection.

The curator's room is fitted with abundant shelving. Here all new specimens are received, are given a consecutive entry number in the museum entry book, and are filed on the shelves, classified under organs. These curator's specimens are added from time to time to the

1. British Med. Jour., Dec. 9, 1893.

2. Virchow: Das Neue Path. Museum zu Berlin, 1901.

museum as the occasion arises or the opportunity for mounting occurs.

An end of the obstetrical museum is railed off for "hand-specimens" of the different organs. These are duplicates of specimens already in the museum, which may be removed from the jars at will by lecturer or student. The remaining museum apartments in the other parts of the building are the maceration room, the preparation room and an extra storage room in the basement.

THE CLASSIFICATION.

The museum is arranged on an anatomic classification with a pathologic subclassification. It is necessary to emphasize this particular, because, although the exact form of classification in use is not essential, it appears to me that a detailed method of some kind is absolutely necessary to the development of a true teaching museum. And the decimal system of descriptive catalogue numbers recently applied here after a plan suggested by the late Prof. Wyatt Johnston, has been so practical in its results and working that it can not be passed by, although a full account of it has already been published elsewhere.[3]

The museum is divided into ten sections corresponding to the ten systems of the body. Each system is subdivided into its different organs, which are placed in order under its section, the specimens arranged under each organ according to the pathologic classification, of which there are likewise ten main divisions, with subdivisions of these as in the anatomic classification. In the descriptive catalogue number the anatomic condition precedes, and the pathologic follows the decimal point, while the particular specimen is indicated by a small index figure to the right of the catalogue number. Thus if 11. represent the pericardium, and .34 fibrinous inflammation, 11.34^{1} means the first specimen on the shelf of fibrinous inflammation of the pericardium.

The museum is thus divided into the following sections, each of which is labeled and numbered:

Systems.—1, the circulatory; 2, respiratory; 3, digestive; 4, glandular; 5, urogenital; 6, female generative; 7, nervous; 8, muscular and tegumentary; 9, osseous; 10, regional.

These are again subdivided as follows (each subdivision in the museum bearing the name and number of the organ belonging there):

Organs.—11, pericardium; 12, heart and myocardium; 13, endocardium; 14, arteries; 15, veins.

Twenty-one, nose; 22, larynx; 23, trachea and bronchi; 24, lung; 25, pleura.

The main divisions of the pathologic classification are: .1, anomalies; .2, circulatory disturbances; .3, inflammatory; .4, infections and parasites; .5, granulomata and general diseases; .6, progressive changes; .7, degenerations; .8, wounds and injuries; .9, specific artefacts; .0, general and supplementary.

Into the subdivisions of the pathologic classification it is unnecessary to enter here, as it is the subordinate classification in the museum and, moreover, is only detailed in those departments in which there are many varieties of a given condition, as in the inflammations of the pericardium, anomalies of the heart, etc. Nor is it adhered to strictly in order of teaching wherever convenience or clearness suggests it should be set aside: only the specimens bear their descriptive numbers and so always stand in the same order on the shelves; while, if no circumstance give another direction to one's thought, one's mind has always a definite order to follow in the presentation of ideas.

The order of the anatomic classification, on the other hand, is strictly adhered to. It is followed exactly in the systematic demonstrations one department after another being gone over in rotation, in the order of all specimens wherever filed away, and in all notices sent out. And this is found conducive to celerity and thoroughness.

So much for the general arrangement and classification of the museum. The work done there for and among the students may be summarized under the following heads:

1. The development of teaching series.
2. The supplying of lecture rooms and clinics with illustrative material.
3. The systematic demonstrations to students.
4. The exhibitions to students and to the teaching staff.
5. Written descriptive exercises on museum specimens.

THE DEVELOPMENT OF TEACHING SERIES.

In the application of the descriptive catalogue numbers, in responding to the demands of the lecturers or clinicians for material to illustrate their didactic work, in elaborating the descriptive catalogue, and most of all in the systematic instruction of students within the museum, the curator becomes aware of the lack of specimens illustrating given pathologic conditions. From time to time a circular of information is issued to the pathologists of the city hospitals informing them of the *lacunæ* in the collection.

ILLUSTRATION OF LECTURES AND CLINICS.

The lecture rooms are, of course, supplied at request, and also the clinics at the hospitals, when desired. Strong baskets are kept for this latter purpose, and borrowers' forms, "returnable in 48 hours," are signed. The very valuable specimens are, of course, not sent out in this way, but the demand can generally be met usefully, the need only being to supplement the teaching collections which are kept at the hospitals themselves.

THE TEACHING OF STUDENTS WITHIN THE MUSEUM.

All the work done in the museum, both descriptive exercises and the regular demonstrations, is entirely voluntary, a matter arranged between the curator, with the sanction and encouragement of the director of the museum, and the students, through their class president. The work has no place on the curriculum, and the only hour left free for it has been 8 a. m. The attendance and the descriptive exercises done do not raise the students' standing in any way.

These circumstances have rather helped than retarded the development of the classes. A high average attendance of the best men in the year is always to be had; the morning hour finds everyone fresh and untired.

THE MUSEUM DEMONSTRATIONS.

So far, these have been given to the fourth year only, which is divided into five groups of some twenty men each, each group coming in one morning in the week. It has been found expedient to make the groups rotate during successive weeks, as in the course of the repeated demonstrations of the same material interesting points are brought out, so that classes held at the end of the week have the advantage. Saturday morning is kept free and is used to respond to the special requests of some

3. American Medicine, April 3, 1903.

few of the students who may wish some point in the week's work reviewed.

In the demonstrations, the order of the anatomic classification is followed around the whole museum, every organ being examined in rotation until all the museum material of real interest has been shown.

The method used in showing the material is entirely descriptive, and "quizzing." The specimens are arranged in order on one side of the shelving of the long center table, and in a short introductory talk of some five minutes (during which also as much as possible is done by questions), an attempt is made to bring forward the salient points in the series to be studied. Sufficient jars are then given out to a few of the class to keep the whole group busy, and a couple of minutes is allowed for preliminary examination of the individual specimens before quizzing on one of them is begun. The group is small enough to allow all present to see the specimen under consideration, and there is room for difference of opinion and for the introduction of many other specimens for purposes of illustration and explanation of disputed points. Discussion is encouraged and a set of standard text-books is at hand for reference, and the clinical notes of the cases where these are available.

In these demonstrations, covering as they do so wide a field, the special pathology of the internal organs, the surgical pathology of bone, the diseases of the special senses, the pathology of obstetrics and gynecology, the curator does not attempt to teach the student as one especially informed along any line, but only to lead him in the study of the specimen for himself, while bringing to his notice, in the quickest possible way, all the illustrations of a given fact that the museum affords.

THE EXHIBITIONS.

At the close of the week's demonstration, the organ which has been studied by the different groups in rotation is transferred to the shelving on the other side of the table to make room for the series of the week following. There it is kept on "exhibition," with the descriptive card catalogue at hand for purposes of review by the student. As the other organs of this system are studied, they also are placed "on exhibition," the other tables with shelving being called into use when necessary. When the demonstrations on this system are completed, or at a certain point in it if the material is very extensive, a pause is made in the morning grinds. The system, or a part of it, having been meantime arranged in first-rate order by mounting the specimens used from storage to fill in gaps in the teaching series, by re-labeling, etc., is declared "on exhibition" by a notice posted to the students and by circulars issued to the members of the teaching staff.

These circulars are sent to the teaching staff to stimulate their interest and also to give them an opportunity of informing themselves of what the museum contains.

For a week or more, reviews are held on parts of the system on exhibition at the request of the students. The systematic "grinds" are then resumed.

In March, when the sessional work becomes very heavy, the regular demonstrations stop, and the opportunity is now taken for the "Annual Exhibition," when all specimens that have been mounted during the current year, having been catalogued and carded, are placed "on exhibition," for the benefit of faculty and students alike, before being placed on the shelves. Much informal demonstrating is done while this exhibition continues.

It is common also for some of the lecturers in the different departments and for some of the clinicians to request the collaboration of the curator in the illustration of their subject within the museum. The series requested is placed "on exhibition" within the museum and is either demonstrated by the lecturer himself or informally by the curator to successive groups.

STUDENTS' DESCRIPTIVE EXERCISES.

Specimens of a given condition, with three or four others, showing allied or differing conditions, are allotted to the student, to be worked out at hours of his own choosing. Museum forms are supplied having the following directions stamped in the upper left-hand corner (for which purpose a rubber stamp is kept):

Subject, ...; Date, ...; Spec. No., ...; Name, ...; No., ... Describe briefly the conditions shown in the specimen, commencing by an epitomized anatomic diagnosis and then describing fully first the anatomic and then the pathologic appearances. Indicate doubtful appearances by the sign (?). On the reverse side of the sheet mention the most important allied or associated conditions not shown in the specimen. Point out the points of similarity and difference in the specimens of allied conditions allotted for comparison.

This rubber stamp was presented by the late Professor Wyatt Johnston, whose suggestion these descriptive exercises were. Although the time of the student is too limited for extensive work of this kind, each one can manage three or four of these sheets, and as an introduction to the work in the museum, familiarizing the student with the descriptive method that is attempted in all the oral work, and in making him realize the immense value that the careful study of a single diseased organ is to him, these exercises are simply invaluable. I ascribe the success of the museum demonstrations later in the season largely to the effort made in the beginning by the student himself on these descriptive exercises, which are issued in the first six weeks of the term.

DEMONSTRATIONS TO STUDENTS.

I would like to close this outline of the system in use here with some further details on the museum demonstrations to students. As has been said, it is in the presentation of a series of specimens in an ordered sequence that the strength of the museum system lies. In every such series, salient points will be elicited and made clear which will often have been obscure or difficult. Atelectasis, bronchiectasis, and infarction, the processes of inflammation, and of sequestrum formation in bone; the alterations in the chambers of the heart resulting from changes in the cardio-vascular system; the differing lesions of the intestine in typhoid, tuberculosis, lymphosarcoma and leukemia; fetal anomalies; these are but a few examples of the miscellaneous difficulties which a simple classification makes plain to the student, so that he who runs may read.

The following synopsis of some of the demonstrations on the circulatory system may serve as an illustration of the series shown, and of some of the points elicited.

INFLAMMATIONS AND DEGENERATIONS OF THE PERICARDIUM.

Specimens are shown of fibrinous, sero-fibrinous and plastic inflammations; of the hemorrhagic and purulent forms. Of chronic conditions are shown simple thickening and opacity of the pericardium, complete and partial synechia of its layers, milk spots, localized tags of adhesions, mediastino-pericarditis and calcification of the organized products of a past inflammation.

The difference in the gross appearances of fibrin, an inflammatory exudate covering the acutely inflamed serous membrane, and the fibrous tissue of an old inflammation that has undergone organization, is emphasized.

In severe grades of pericarditis, a myocarditis by contiguity is seen, and frequently a pancarditis, the whole heart becoming inflamed. Also it is noted that in a mediastino-pericarditis the conditions are presented for the development of physical signs during life, while in a simple adhesion of the layers to each other, no such signs need occur.

CHRONIC ENDOCARDITIS.

Under this we understand several different processes: First—A slow sclerosing process, chronic from the onset. Second—A fibroid change, beginning in absorption of the products of inflammation, often continuing on far beyond the seat and the time limit of the initial lesion, and resulting in atheromatous and calcareous change. Third—The term chronic inflammation is often used as a misnomer for heart lesions which are the result of a past inflammation, although no true inflammatory process nor anything but the direct results of the mechanical changes in the heart is now at work.

In considering the subject of chronic endocarditis, the important point is the lesions that are left behind. We will look at fusion of the segments of the semilunar and auriculo-ventricular valves, shortening of the chordæ tendinæ, crumpling, binding down, fore-shortening of the semilunar cusps—all the conditions, in short, that go to produce a valvular stenosis or insufficiency.

HYPERTROPHIES AND DILATIONS OF THE HEART AND SIMPLE ATROPHY.

In examining this series of alterations in the capacity and volume of the different chambers of the heart, or of the heart as a whole in their different degrees and combinations, together with the causes in operation that have produced these alterations, the mechanics of the condition are made much plainer than they can be at the bedside or in the postmortem room in the examination of an isolated case. In every case of extra strain on the heart, whether from extracardiac rise of pressure or from intracardiac leakages, there is a physiologic dilatation first, due to the increased size of the cavity resulting from the physiologically hypertrophied and therefore extended wall. Later on, when the hypertrophy can not meet the strain any longer, a pathologic dilatation results, and the patient dies. These points are illustrated in the specimens, as also another, that it is the chamber or chambers behind an obstruction that dilates and hypertrophies.

The following specimens are shown: Normal heart, simple atrophy of the heart in asthenic state; simple acute dilatation of the heart (parchment heart); so-called concentric hypertrophy (hypertrophy with relatively little dilatation) of the left ventricle in aortic stenosis (two cases); idiopathic hypertrophy and dilatation of the heart in overwork; hypertrophy and dilatation of the heart in arteriosclerosis, with arteriosclerotic kidneys; cor bovinum of aortic insufficiency—an enormous left ventricle with a wide cavity; cor bovinum in aortic insufficiency, with atheroma of the aorta and arteriosclerosis—an enormous heart; hypertrophy and dilatation of the heart in aortic insufficiency, with atheroma of the aorta and marked atheroma of the coronaries—a moderately enlarged heart with a greatly dilated left ventricle, pathologic dilatation having set in comparatively early before hypertrophy had gone very far; heart in mitral stenosis, showing dilatation and hypertrophy of left auricle and enlarged right heart; heart in mitral insufficiency; cor bovinum in complete *concretio pericardii cum corde* with mediastino-pericarditis; hearts showing combined valvular lesions.

In conclusion, I would express my obligation in this work to Professor Adami, director of the museum, and to the late Professor Wyatt Johnston. The museum teaching has been developed with Dr. Adami's support and kind encouragement, while many of the ideas on which the museum system is based have been elaborated at Dr. Johnston's direct initiation and suggestion.

To the artistic mounting of the specimens by the preparator, Mr. Judah, much of their usefulness to the students is also due.

DIPHTHERIA INFECTION IN MINNESOTA.

RECENT EXPERIENCES WITH THE DISEASE IN SCHOOL CHILDREN AND IN INSTITUTIONAL EPIDEMICS.*

F. F. WESBROOK, M.D.

Director of the Laboratory of the Minnesota State Board of Health and Professor of Pathology and Bacteriology, University of Minnesota.

MINNEAPOLIS.

It is not the purpose of this communication to enter into the minute consideration of all phases of the prevention and eradication of diphtheria, but to present briefly the general features of some of the methods which have been found practicable in Minnesota and in which the laboratory has been used as the guide to executive action and restrictive measures.

In the work of the Minnesota State Board of Health, the problems have naturally arranged themselves into three main groups.

I. The routine work of dealing with diphtheria as it occurs in family life.

II. Widespread epidemics in which the day schools have to be closed.

III. Infection which gains entrance into institutions in which children or other inmates are housed, employed, taught or confined, and where great opportunity for the spread of infection is present.

I. DIPHTHERIA IN FAMILY LIFE.

The routine work of the State Board of Health is probably but little different in Minnesota from that in other parts of America except that it is confined largely to country towns, villages, small cities and rural communities. In general, isolation of suspicious cases is followed by the imposition of official quarantine, based on a positive report mailed or telegraphed from the laboratory of the board to the attending physician and the local health officer. Quarantine is maintained until a negative report or, when practicable, two successive negatives are made on throat cultures.

Modified Löffler's serum made by a rapid process is employed for the culture medium. This contains 1.25 per cent. of glycerin, the tubes are covered with rubber caps and the medium remains fit for use for twelve to eighteen months. Löffler's methylene blue is used for staining. Unless positive, no report is given on fresh preparations or, in fact, on anything other than a satisfactory culture made at the bedside, forwarded by the local physician and incubated in the laboratory for eighteen hours. In villages and towns, as also in smaller cities, no difficulties are presented, and the use of the laboratory is becoming more widespread. In country districts where it is necessary for physicians to make long journeys in order to see their patients, or where there are not physicians available, it is sometimes impractical to insist on a rigid adherence to the methods outlined for general use. Physicians are urged, and the public is educated, to take advantage of the laboratory diagnosis as a means of shortening the quarantine period and minimizing the dangers of infection.

Observations covering the years 1901 and 1902 have shown that in clinical cases of this disease diphtheria bacilli have disappeared in 3 per cent. by the 7th day,

* Presented before the American Public Health Association, Havana, Cuba

27 per cent. by the 14th day, 51 per cent. by the 21st day, 83 per cent. by the 28th day, 93 per cent. by the 35th day and 100 per cent by the 70th day.

There is an occasional long persistence of the virulent types of *B. diphtheriæ*. One has been under observation within the last few weeks. A schoolgirl, aged 10 years, under the care of her father, one of Minnesota's best physicians and health officers, was found to harbor diphtheria bacilli for 109 days. On the 72d day the bacilli were isolated in purity, tested and found fully virulent. A school teacher, a young woman, aged 20, who had clinical diphtheria, still shows that typical diphtheria bacilli, which have been demonstrated by 13 successive positive examinations, have persisted for 71 days.[1] A boy, aged 5, still had diphtheria bacilli present (Jan. 2, 1905), i. e., 79 days since the disease began. On the 46th day the bacilli isolated in purity were virulent for guinea-pigs. Notwithstanding these occasional instances of long persistence, it is plain to all who have studied the question that the laboratory report on the presence or absence of the diphtheria bacillus affords the only satisfactory basis of quarantine.

In Minnesota, when laboratory examination is impracticable, an optional time limit of four weeks from the date of the disappearance of last symptoms is permitted, but not encouraged. The laboratory examination will, in most cases, very greatly shorten this time and, since it is the presence or absence of the diphtheria bacillus which constitutes the danger or freedom from danger, the laboratory examination is the only basis of quarantine which should be permitted. All members of a household in which diphtheria is present should be examined, and quarantine should be maintained on those who show the presence of typical diphtheria bacilli. The fact that similar bacilli have shown themselves to be virulent for human beings by the production of symptoms in a member of the family may be taken as initial presumptive evidence that any of the bacilli which are present in that particular household may be virulent.

II. INFECTION DEMANDING ACTION ON THE PART OF THE SCHOOL AUTHORITIES.

When diphtheria becomes widely distributed in a community necessitating the closing of the day schools or when the disease has persisted throughout the summer months, appeal is often made to the Minnesota State Board of Health for aid in determining a safe course which will enable the authorities to keep the schools open without endangering the health of the public.

Within the last five years this problem has frequently presented itself and by degrees a simple system has been evolved which has been found to yield most satisfactory results. It requires harmony between the local board of health and the school authorities if, without the constant supervision of some member of the executive or laboratory staff of the State Board of Health, the local authorities are to be depended on to carry out the necessary details.

In one very recent investigation, a most efficient medical health officer happened also to be chairman of the local school board, and except for ten days' time given to the inauguration of the work and the illustration of methods of tracing infection and some slight technical instruction, the work has been carried out entirely by the local authorities. The actual bacteriologic examination and report are made, of course, by the laboratory staff of the State Board of Health.

The only remaining factors necessary to successful work are the requisite executive authority, the confidence of the public and a fully equipped laboratory with a staff capable of meeting satisfactorily such emergencies. In this school and institutional work the demand on the laboratory is at times rather heavy. As an illustration, in 1897 and 1898, one member of the staff of the Minnesota State Board of Health made and examined in three months over 5,000 cultures in the branch laboratory established for the purpose, and supervised the necessary work of isolation, disinfection and recording.

In the last month (December, 1904), in addition to other heavy routine work and considerable traveling, it has been necessary for the laboratory staff to examine, record and report on over 3,500 diphtheria specimens, or nearly 9,300 for the four months ending Jan. 1, 1905. The necessity for a smoothly working system is thus made apparent, since the school openings all occur at the same time, and several investigations may be in progress at one time, each one involving the examination and supervision of from 100 to 450 children. The work may, perhaps, best be illustrated by quoting directly from one or two of a large number of such investigations.

During the year 1900 Park Rapids, a town of about 1,000 inhabitants situated in a lumbering community 350 miles from the laboratory, became badly infected with diphtheria. Not only school children, but adults also were attacked. The neighboring lumber camps and tributary territory became involved, and the disease persisted throughout the winter and did not disappear even in the late summer months, owing to repeated reinfection from outside sources. In August, 1901, on the appeal of the locality, the executive officer of the State Board of Health and the director of its laboratory visited the town to investigate conditions and outline methods for the control of the disease which would interfere as little as possible with the routine of affairs and which might still permit the opening of the schools, to which the citizens had looked forward with dread.

A careful study was made, and all cases of diphtheria then in existence were investigated and all rumors and suspicions of possible cases were followed up. At a joint meeting of the town council and school board, matters were thoroughly discussed, and it was recommended:

1. That the opening of school be deferred.
2. That the teacher and children of each room in the school be called together at the school at a specified time on a particular day to be set for each room and publicly announced.
3. That a representative of the State Board of Health be present who would take nose and throat cultures of each one of the children. The cultures were to be forwarded to the laboratory for examination and report.
4. That each child and each teacher who showed diphtheria bacilli be excluded from school until he and all of his family were found free of infection.

Dr. E. H. Beckman of the laboratory went to the town and spent nearly two weeks in this work of taking cultures and investigating the environments and history of all families in which positive laboratory findings were reported, and in securing and recording data, including maps, showing location, distribution and dates

1. Since the paper was presented, a pure culture of diphtheria bacilli has been isolated from this patient on the 80th day and has proved fully virulent for guinea-pigs.

of infection. As a result, over 350 school children were examined, more than 1,200 examinations made, school opened one week late, and diphtheria disappeared under the conditions and at the time of year when there was every reason to expect its increase. The willing cooperation of the town council, school board and general public was easily secured and retained. The educational value of the work has been as apparent during the subsequent years as was the resulting practical utility at that time.

Since then this work has grown steadily in amount and practicability. Dr. L. B. Wilson undertook and carried forward a similar investigation on approximately the same scale at Grand Rapids, a lumbering center, in September, 1903. Owing to the occurrence of the disease in adults, such as prostitutes and employes in saloons, there were certain other practical difficulties to be met and overcome, but strict quarantine and restrictive measures were easily formulated and enforced, and the results attained were as successful as those in Park Rapids.

Work of a similar character, but on a much larger scale, has just been brought to a conclusion in Benson, a town of about 1,600 inhabitants, in a farming community, where diphtheria had persisted throughout the summer of 1904. The health officer, Dr. Scofield, is also chairman of the school board. The town council and school board stood ready to second his efforts in every direction. Dr. L. B. Wilson of the laboratory went to Benson, Sept. 6, 1904, in order to make a thorough investigation and to examine all of the school children and teachers before the opening of school. A different plan was followed here, namely, to go from house to house making careful inquiries and taking specimens of all the inmates. What was really a practical quarantine was instituted wherever individuals were found infected with diphtheria bacilli, independent of clinical manifestations, and school was not opened until all the school children and their families had been examined. On the opening of school only children who were themselves free from diphtheria bacilli and whose families were also free were permitted to attend, and as a result the disease has disappeared. During Dr. Wilson's visit, and after his return to the laboratory at the end of ten days, provision was made by the locality for the careful following up of all individuals who had come recently into contact with clinical cases, and in this way much interesting and valuable information relative to the spread of diphtheria was secured. In some instances, diphtheria bacilli were found present in exposed individuals several hours or days before the symptoms of the disease appeared.

Similar methods have been employed and comparable results obtained in a number of other places, notably Browerville, Duluth, Robbinsdale, Heron Lake, etc.

In dealing with day-school infection it therefore seems to be entirely practical to exclude infected individuals or children of infected households independent of clinical manifestations of the disease, since the school authorities are at liberty to exclude pupils perhaps more readily than it is possible to enforce strict household quarantine. In Minnesota public sentiment supports such methods and at times demands them.

By the substitution of the comparative segregation of home life for the crowding together of school life the danger of distributing or receiving infection is minimized, as the possibility of the control of diphtheria increases with approximation to individual isolation.

III. DIPHTHERIA INFECTION IN INSTITUTIONAL LIFE.

This affords a problem in which the difficulties are in direct relation to facilities afforded for the exchange of nose and throat contents between the inmates.

Among adult prisoners, especially where isolation is almost complete, there is little danger of the spread of infection. On the other hand, in charitable institutions where children are constantly associated in large groups, at play, at school, at work and in dormitory life, the chances for the spread of infection are not only greatly increased, but additional opportunities for its introduction from outside by new-comers have also to be recognized.

During the past nine years the Minnesota State Board of Health has been called on to take charge of epidemics of diphtheria in a number of state and private institutions in which the variation in conditions of life and environment was very great. These have included the State School for Dependent and Neglected Children (practically a state orphans' home of 250 or more children), State Training School (a correctional home for nearly 500 children), state hospitals for the insane (with 1,000 to 2,000 inmates), state schools for deaf, dumb, blind and feeble-minded, seminaries and schools where the students are housed, charity orphan asylums and a charity lying-in home where women are admitted and employed in some capacity for a year after their confinement. While each institution presents peculiar features and has individual difficulties which can be properly understood only by the consideration of a detailed report illustrated with maps, photographs, clinical notes and accurate data,[2] certain general features common to all may be mentioned here in relation to the measures for control.

In all, there is the massing together of individuals either in dormitory life, at meals, for instruction or religious exercises, and during employment in the fields or in work shops. This increased opportunity for exchange of the bacterial flora of nose and throat is in direct relationship to the age, intelligence and habits of the individual, as also to character of the institution and structural and other environmental conditions.

A recent investigation not yet complete may serve as an illustration of methods and results. The State School for the Deaf at Faribault provides for the housing and instruction of over 280 pupils, mostly children, but above the age of 8. Certain of the pupils are state or county charges, but all of them are returned during the summer vacation, either to their own homes or to a home provided for them. Most of the employes and teaching staff (about 50) reside not in the institution, but in the town. Diphtheria appeared Sept. 25, 1904, having been prevalent in Faribault for a number of months both in the residents and in the employes of a boarding school for girls. Owing to the increase of infection, Dr. Bracken, the executive officer of the State Board of Health, was called to give advice and aid. On his recommendation a member of the laboratory staff, Dr. McDaniel, went to the school Dec. 2, 1904, and found 17 clinical cases, 3 more appearing on the following day. The general arrangements provide dormitories for the girls, in which from six to twelve are accommodated in single beds. In a separate building similar accommodations are available for the boys, the building being divided by a wall in the center so as to separate them into two groups according to age. Meals

2. These will appear in the biennal reports of the Minnesota State Board of Health.

are provided for all pupils in one dining room. A separate new school building is available for their instruction, although some pupils are still taught in the main building. The clinical cases had all been removed to the school hospital, a separate frame building.

Immediately all the employes and teachers were examined by nose and throat cultures for the presence of diphtheria bacilli. All infected individuals were quarantined in their homes or isolated in the institution. All who showed suspicious bacilli (other types[3] than D, C, or A) were re-examined, and if they failed to show D, C, or A on the second examination were released.

As it was impracticable to examine nose and throat cultures from all pupils in one day they were grouped according to the possibility of providing isolation in sleeping quarters. These were practically according to age and sex, the smaller children being examined first because they showed greater infection. As examination proceeded, the girls shown to be uninfected by double negative cultures of both nose and throat were housed and fed in the detached and freshly sterilized school building under the supervision of uninfected teachers. Similar arrangements were made for the boys in the manual training building. The children showing suspicious bacilli were kept in their quarters until two re-examinations had been made. The infected well children (about 28 per cent.) were isolated under the care of a nurse in the various school rooms in the north wing of the main building. Especial attention was given to the cleansing of their noses and throats by alkaline washes followed by formalin. Antitoxin in 2,000 unit doses was also administered later.

As soon as the inmates were shown to be uninfected by three successive negative nose and throat cultures they were placed with the uninfected groups which gradually increased in number, and were returned mostly to their homes, but partly to the old dormitories which had been thoroughly disinfected. Only two new clinical cases have developed since the completion of the segregation, and the disease seems to be pretty well eliminated, although there were many difficulties incident to overcrowding, some difficulties in instructing the pupils, and some due to the facts that the pathologic conditions of the nose and throat which originally gave rise to the deafness were favorable to diphtheria infection, and that the use of the sign language employed increased opportunities for infection from the hands.

A similar problem was presented at the State Hospital for the Insane, with over 1,000 inmates and employes, at St. Peter, Minn. The executive officer of the State Board of Health and the director of its laboratory had visited the institution on Oct. 15, 1904, to investigate both typhoid fever and diphtheria. The former was easily suppressed, but the latter, which had been introduced by a male nurse and later had been given by him to his fiancée, a nurse in the female wards, was not so easily managed. Dr. Bracken again visited the hospital Nov. 19, 1904, and Dr. Wilson of the laboratory staff accompanied him, and remained to inaugurate and supervise practical methods. Here, owing to overcrowding dependent on rebuilding and to the difficulties attendant on the mental condition and filthy habits of the patients, the problem was even harder. Without a detailed description a full understanding is impossible, but success has thus far been obtained.

In summarizing this work the following points are apparent:

1. An adequate laboratory staff and equipment is essential, since only by thorough laboratory examination can the presence of possible danger be determined.

2. It has been found convenient to utilize institutional laboratories when available where the members of the laboratory staff of the State Board of Health can examine cultures on the spot when there is urgent need of haste.

3. Repetition of examination of both nose and throat specimens is advisable in all cases and especially when suspicious bacilli are found.

4. The types[3] D, C and A are the virulent and important types of bacilli.

5. The individuals must be grouped into:
   - (*a*) Those showing clinical diphtheria.
   - (*b*) Those infected with types D, C or A, but who show no clinical symptoms.
   - (*c*) Those showing other types until by later examination they are definitely shown to be free of types D, C or A.
   - (*d*) Individuals who have been shown to be free of all diphtheria bacilli in both nose and throat. This group gradually increases in numbers.
   - (*e*) The uninvestigated groups in which the individuals should be kept from coming in contact with each other so far as possible, between the time of the taking of the specimens and the receipt of the report thereon. Every effort should be made to prevent exchange of nose and throat bacteria between individuals until it is definitely known whether they are infected or not. In infected individuals the bacilli will be eliminated more quickly the greater the approximation to individual isolation.

6. It is unsafe to place hitherto uninfected individuals who develop sore throat with clinical cases of diphtheria. They should be isolated until examined bacteriologically, since they may be infected not with diphtheria bacillus, but with streptococcus, the spirillum of Vincent, blastomyces or some other micro-organism, and, therefore, may be exposed unnecessarily to diphtheria infection. This has happened repeatedly in the Minnesota investigations.

7. Executive action must be taken on the basis afforded by the laboratory; therefore it is essential either that these two branches be kept in the closest touch or that in the work of inauguration and supervision of methods a laboratory trained man be placed in charge. After the system is well started, competent local medical authorities may be depended on for its continuance if they have been sufficiently impressed with the necessity of care in details.

8. That such methods will give satisfactory results, and are entirely practicable, has been shown in the experience of the Minnesota State Board of Health under conditions which present the greatest possible variation. Three epidemics have been thus suppressed in a lying-in hospital in Minneapolis where there was no adequate nursing force, where the women before and after confinement are employed in the housework of the institution, where the babies are left in charge of different mothers at different times, and where also the

3. Wesbrook, Wilson and McDaniel: "Varieties of *B. diphtheriæ*" Biennial Report Minnesota State Board of Health, 1899-1900, p. 613; also Transactions of Association of American Physicians, 1900, p. 198.

almost daily admission of fresh inmates adds to the opportunities for introduction of infection. A method which had proven satisfactory in lying-in hospitals, boarding schools, schools for the deaf, homes for children, insane hospitals and other such miscellaneous institutions in a climate such as that of Minnesota, would certainly seem to be capable of utilization under nearly any condition which might arise.

9. The experience of Minnesota would seem to point decidedly to the conclusion that diphtheria infection is transmitted usually by almost direct exchange of the flora of the nose and throat.

10. In institutional and school life the more independent the individual and the greater the facilities for individual isolation the greater the freedom from diphtheria infection and the easier is it to eradicate the disease.

CLINICAL EXAMINATION OF THE URINE.

A CRITICAL STUDY OF THE COMMONER METHODS.

RICHARD C. CABOT, M.D.

BOSTON.

(*Concluded from page 842.*)

ACUTE DEGENERATION.

In the 93 cases of this condition which I have studied, the diagnosis was correctly made in all but three. What I desire to point out here is:

1. That the urine may vary very greatly in composition in different cases, despite identical postmortem findings.

2. That in a few cases the diagnosis of something more serious than fever urine might have been made by any one accustomed to take his urinary analysis very seriously.

I will take up this latter point first. Among the cases in which only acute degeneration was discovered postmortem, there were two called acute nephritis before death, and one called chronic nephritis. Besides these there was a case of puerperal eclampsia in which a nephritis of some type was assumed to be present, and in a case in which the patient died in convulsions suspected to be of uremic origin. It is a significant fact that the urine did not enable us to come to any definite decision here, for the current teaching and text-book writing on this point would lead us to believe that if a kidney trouble had progressed far enough to cause uremia the urine would be distinctive.

But experience shows that this is not always the case. A patient comatose and hemiplegic lies before you. The urine drawn by catheter is normal in color, low in weight, contains, say, ⅛ per cent. of albumin and a good many hyaline and granular casts with cells and fat adherent. Such a urine is consistent, as my tables show, with nephritis, with passive congestion, with a simple acute degeneration or even with a kidney normal macroscopically and histologically. In the diagnosis of such a case the urine has, therefore, next to no value.

I recently saw a case of acute aphasia in an elderly woman. The diagnosis seemed to rest between a uremic aphasia and one due to a slight cerebral hemorrhage. The urine had practically the character of that just mentioned, and as there was no motor paralysis, no coma but considerable nausea and headache, there was a good deal to support the diagnosis of uremia. Yet the patient made a prompt and complete recovery, and the urine was normal within a week. What the case shows is that a urine must be very bad, the amount of albumin and the number of casts very large before we can safely say "That urine could only have come from a kidney of nephritis," and even then, unless dropsy is present, we shall now and then be proved wrong, as will be shown below.

Before beginning the discussion of a group of cases in which nephritis was diagnosed during life, but only acute degeneration found after death, I want to anticipate the objection that the postmortem lesions which I have called acute degeneration may have been just what others would have termed acute nephritis of a degenerative or desquamative type. If this were true, the discrepancies between antemortem and postmortem records on which I am about to dilate would cease to have a meaning.

Let me, therefore, explain why I call these cases acute degeneration and refuse them the name of nephritis. By acute degeneration I mean only such a degree of granular or fatty change in the epithelium of the tubules as is to be found postmortem in almost every fatal case of typhoid, pneumonia or other infectious disease. Hardly any kidney is totally without a certain degree of these degenerative changes postmortem, and in infectious diseases they become more marked. But we do not think it advisable to say that all these cases have nephritis. If we did we should be forced to the paradox that almost everybody has a certain amount of nephritis when he dies.

Granular or slight fatty changes in the tubules alone —the glomeruli, interstitial tissues and vessels remaining otherwise normal—do not, in my opinion, deserve to be associated with the term nephritis, because this term naturally and properly calls up in our minds a clinical symptom-complex which is totally absent in these cases, and because the term is not one which we are prepared to associate with every fatal case of an infectious disease.

With so much of preface and preliminary defense, I pass on to mention a group of cases in which nephritis, Bright's disease in its ordinary sense, was diagnosed during life and only degenerative lesion of greater or less extent found postmortem. (See also Table 7, Cases 4, 5, 9 and 11.)

CASE 1.—Bronchopneumonia found postmortem to be tuberculous in origin, but supposed during life to be associated with an acute nephritis.

Urine.—The 24-hour amount was reduced to 300 c.c., with 1.7 per cent. of urea, and albumin amounting to .5 per cent. as measured by Esbach's apparatus was present, while the sediment contained scanty hyaline and granular casts.

Is not this enough for a diagnosis of nephritis? We can not say "yes" in view of the fact that none was found postmortem. But if we say "no, that urine is not bad enough to call nephritis, for, though the amount is but 300 c.c., and the albumin .5 per cent., the casts were scanty and only of the hyaline and granular varieties"—if we say this, what are we to make of that series of 19 cases of acute glomerular nephritis, in many of which the casts were no more numerous than in this case, and the other features of the urine less alarming?

CASE 2.—An Italian, 27 years old, was brought to the Massachusetts General Hospital entirely unconscious, having been taken from a vessel which had stopped at several South American ports. No history was obtainable.

Examination.—His temperature was 102.8, with moderate leucocytosis, and evidence of slight solidification of the apex of the left lung. The abdominal viscera showed nothing abnormal so far as we could demonstrate. The neck was moderately retracted and stiff.

Urine.—Fourteen ounces of urine were drawn by catheter and found to contain over .5 per cent. of albumin. The urine was high colored but not distinctly bloody, and the specific gravity, 1,017. The sediment showed from 10 to 20 casts in every field of a No. 5 Leitz objective. The casts were mainly granular—a few epithelial.

Blood.—Prolonged examination of the blood excluded malaria. Yellow fever, cerebrospinal meningitis and uremia were considered, but as there was no definite evidence for the former of these and as the fluid obtained by lumbar puncture showed no growth, the diagnosis of uremia seemed most reasonable.

Autopsy.—At the autopsy, Dr. Wright found cerebrospinal meningitis, due to the *diplococcus intracellularis.* The kidneys showed absolutely nothing abnormal so far as Dr. Wright could determine, either macroscopically or microscopically.

CASE 3.—More recently a case was admitted to the surgical wards of the Massachusetts General Hospital, for relief of an abdominal tumor, which turned out on exploratory laparotomy to be an aneurism. Prior to the operation the urine was normal, but immediately afterwards its quantity fell to 500 c.c. in twenty-four hours, and never arose above that amount during the week, at the end of which he died.

Urine.—During this period the urine was pale, turbid, with a specific gravity ranging near 1,014 and about .7 per cent. of albumin (Esbach). Among the casts, which were very numerous, were many highly refractile, dense ones.

Autopsy.—The diagnosis at the time of death was uremia, but at autopsy absolutely nothing abnormal was found in the kidneys, macroscopically or microscopically.

CASE 4.—The clinical diagnosis stands on the record book: "Pneumococcus bronchitis with acute nephritis." The patient ran a fever varying between 101 and 103 for two months. There was rusty sputum loaded with pneumococci. General edema gradually developed and as death approached fluid accumulated in each pleural cavity.

Urine.—During the first two weeks of her stay in the hospital the patient's urine averaged about 1,000 c.c. in 24 hours, with a specific gravity of 1,016, .25 per cent albumin and 1 per cent urea. The sediment showed very many hyaline and granular casts of all sizes, a few epithelial blood and fibrinous casts. Considerable fat and fatty renal cells adherent to casts. Considerable free blood, normal and abnormal. Later the amount of albumin increased to .7 per cent (Esbach) and the urea fell to 9.8 gms. In the sediment there appeared an abundance of highly refractile casts, most of them plastered with renal cells and many with fat drops. A few days before death the casts became more scanty as the edema increased.

At autopsy only "acute degeneration" was found.

TABLE VI.—MARKED URINARY ANOMALIES. ACUTE DEGENERATION (POST MORTEM.)

Case No.	Autopsy No.	Anatomic diagnosis.	Clinical diagnosis.	Urine.					Remarks.
				24-hour amount.	Spec. grav.	Albumin, per cent.	Urea.	Sediment.	
1	762	Abscess and gangrene of lungs. Fractured skull. Sero-fibrinous pleurisy. Kidney opaque but histologically normal.	None made.	.....	.....	1/8	.....	Few hyaline and granular casts with blood, fat, cells adherent.	Convulsions. Coma.
2	541	Typhoid fever. Kidneys pale grey but histologically normal.	Typhoid.	.....	1021	1/4 +	.....	Fairly numerous hyaline and granular casts with moderate amount of fat and fatty cells adherent. Free blood.	
3	203	Typhoid fever. Kidneys pale and opaque. Tubules contain much granular material and delicate ring-like bodies.	Typhoid with hemorrhage.	700 c.cm.	1013	0.8%	.....	Large number of coarse and fine granular casts; few hyaline epithelial casts. Few blood cells.	
4	134	Acute cystitis. Pyelitis. Cortical epithelium granular and encroaching on lumen of tubule.	Cancer of prostate. Acute nephritis.	650 c.cm.	1024 to 1015	Slight trace to 1/8.	.....	Many hyaline and brown granular casts; few blood and fatty casts.	
5	102	Subacute pleurisy and pericarditis. Renal epithelium swollen, broken and granular. Nuclei poorly stained.	Chronic nephritis.	1000 c.cm.	1021	Large trace.	.....	Many hyaline and granular casts; fat cells and blood adherent. Few epithelial, blood and brown granular casts.	
6	51	Otitis media. Bronchopneumonia. Swelling of the renal epithelium without any other changes.	Otorrhea. Subglossitis. Fracture of the base.	.....	1027	1/4	.....	Numerous hyaline casts with much fat adherent. Few fatty casts.	
7	46	Gangrenous proctitis. Chronic cystitis. Bronchopneumonia. Marked cloudy swelling of cortical epithelium; that of pyramids much broken up and degenerated.	Enlarged prostate.	1680 c.cm.	1014	1/8	0.95%	Numerous hyaline and granular casts; many with oil globules and fatty cells adherent. Much blood and pus.	Examination by Dr. Wood who comments: "Some of the cells suggest morbid growth."
8	37	Phthisis, miliary tuberculosis. Cloudy swelling of epithelium of cortical tubules.	Tuberculous meningitis.	.....	1028	1/4	.....	Many hyaline, fine and coarse granular casts, with blood, fat and cells adherent. Free blood.	
9	178	Typhoid fever. Bronchopneumonia. Kidneys show some cloudy swelling of the epithelium and congestion of the vessels.	Typhoid fever. Hypostatic pneumonia.	.....	1023	0.16%	.....	Many coarse granular casts of small and medium diameter. Some epithelial casts.	
10	735	Chronic tuberculosis. Acute miliary tuberculosis. Acute degeneration of the kidneys.	Pneumococcus bronchitis. Acute nephritis.	Average 1000 c.cm.	1016	1/4 to 0.8.	17 grams average.	Very many hyaline and granular casts. Few epithelial, fibrinous, blood and waxy casts. Much fat and fatty cells on casts.	

MARKED URINARY ANOMALIES WITHOUT DISCOVERABLE LESIONS POSTMORTEM.

Twice in the last ten years we have made the diagnosis of acute nephritis and been confronted at autopsy with normal kidneys. In one of these cases, No. 10, Table 7, the patient was thought to be uremic, and not unnaturally, for the patient entered the hospital for edema and vomiting, and was found to have well-marked hypertrophy of the left ventricle, with frequent twitchings of various muscles, in addition to a urinary condition identical with that found in some of the cases of chronic glomerular nephritis (autopsy diagnosis) tabulated in Table 3.

In the eight other cases shown in Table 8, the urinary

anomalies are hardly less marked, and the diagnosis of nephritis might have been made had not the clinicians grown cautious as a result of previous disappointments at autopsy, and practically disregarded the microscopic and chemical findings in the urine so long as its physical characteristics were not remarkable and the patient showed no signs of uremia or dropsy.

The table proves that we may have .25 per cent. or more of albumin with great numbers of all varieties of casts without any discoverable lesions postmortem. It makes us doubt how far the same microscopic and chemical changes, when nephritis is found postmortem, are due to the nephritis. They may be due to accompanying functional disturbances whose anatomic basis is still unknown and not to the known anatomic lesions which they happen to accompany.

SENILE DEGENERATION AND ARTERIOSCLEROTIC ATROPHY.

It will be remembered that I have grouped under this heading only cases in which the atrophic lesions were focal, and involved but a very small part of the organ, so that its function should not be markedly impaired.

I shall pass rapidly over the 20 cases of this group. In only three of them was there any mistake of importance in diagnosis. These three were diagnosed as uremia, nephritis and chronic diffuse nephritis, respectively. They mar the otherwise encouraging record of success in the diagnosis of this affection. It will be remembered that it was in the group of cases in which chronic glomerular nephritis was found postmortem that our chief diagnostic successes were made, and it still remains true that we generally recognize this disease when it is present, but we must confess that we occasionally diagnose it when it is not present, as in the three cases of this series. How the mistake could have been avoided in these three cases I do not see. The urine of each of them was scanty, pale, lacking in urea, highly albuminous and full of fatty casts (Nos. 148, 251, 686); the patients were dropsical and suffered from coma and convulsions, apparently of uremic origin.

But although these 20 cases include but three in which there is a discrepancy between clinical and anatomic diagnosis, they illustrate very strikingly the fact that identical anatomic lesions in a series of kidneys postmortem do not mean identical urinary findings during life. With kidneys containing nothing worse than a few small areas of fibroid atrophy we find associated sometimes only the slightest possible trace of albumin, sometimes .1 per cent, sometimes .25 per cent, sometimes no casts on repeated examinations, sometimes a few of the hyaline and granular type, sometimes a large number of almost every known variety. The specific gravity may be high, low or medium. The 24-hour amount was almost always below normal.

FATTY DEGENERATION

Only cases in which the fatty change was extensive have been included in this series. The mild cases have been classed along with the acute degenerations. (See Table 6.)

The data available in these seven cases are only sufficient to demonstrate that there is no single set of urinary findings which correspond with the anatomic conditions of extensive fatty degeneration. In one case there was no albumin; in two the albumin was scanty, and in two there was .25 per cent. Casts were absent in two, scanty in two and abundant in two. Fat on casts was present in but two.

The urine was altogether suppressed in one case and in two others it was reduced to about one-half its normal amount, while in the remaining cases the 24-hour quantity was not measured.

ALBUMINURIA AND CYLINDRURIA.

Although we are ignorant just what conditions make the kidney let albumin pass through into the urine, it is perfectly safe to say that the conditions are other and less stable than those which we describe from the postmortem lesions as one or another variety of nephritis. Some of the cases here mentioned in detail prove that albumin in large amount may be present in the urine

TABLE VII.—MARKED URINARY ABNORMALITIES WITHOUT RENAL LESIONS (POSTMORTEM).

Case No.	Autopsy No.	Anatomic diagnosis.	Clinical diagnosis.	Urine.					Remarks.
				24-hour amount.	Spec. grav.	Albumin, per cent.	Urea.	Sediment.	
1	724	Diphtheritic endometritis. Kidneys show no lesion worthy of mention.	Acute nephritis. Uremia. Endometritis.	.....	1012	¼	.....	Few epithelial and brown granular casts.	Delirium, vomiting, diarrhœa; coma.
2	798	Pneumococcus meningitis. Kidneys, no lesion worthy of mention.	Meningitis.	.....	1042	Large trace.	.....	Many hyaline and granular casts with cells adherent. Few epithelial and fatty casts.	Sugar—2%.
3	784	Typhoid fever.	Typhoid.	.....	1023	0.1	.....	Many hyaline, fine and coarse granular casts. Few brown granular and epithelial casts.	
4	783	Gastric ulcers. Peritonitis. Bronchopneumonia.	Gastric ulcer.	.....	1011	Trace.	.....	Many hyaline, fine, coarse and brown granular casts. Many highly refractile casts. Few epithelial and pus casts.	
5	776	Pneumococcus pneumonia. Pneumococcus septicemia.	Pneumonia.	.....	1027	0.1	2.8%	Many hyaline, fine and coarse granular casts. Few brown granular and epithelial casts.	
6	612	Cirrhotic liver. Portal stasis.	Cirrhotic liver.	.....	1020	Very slight trace.	1.7%	Many hyaline and granular casts, often with blood or cells adherent. Few brown granular casts.	
7	575	Atrophic cirrhosis. Jaundice.	Cirrhotic liver.	.....	1020	Large trace.	2.7%	Numerous hyaline and fine granular casts, with many cells and fat drops adherent.	
8	520	Mitral stenosis. General passive congestion.	Uncompensated heart disease.	.....	1027	¼ to ½	1.9%	Few hyaline and granular casts, with cells adherent.	
9	424	Tuberculous pleurisy. Pneumococcus septicemia.	None made.	.....	1023	¼	2%	Many hyaline, granular and epithelial casts. Few fatty and waxy casts.	General edema, especially of left side. Ascites.
10	410	Hydronephrosis. Pneumonia.	Acute nephritis.	1000 to 1400 c.cm.	1013 average.	⅓	12.9 grams.	Many hyaline casts, most of them with blood, fat and fatty cells adherent. Few coarse granular and fatty casts.	Twitchings of various muscles. Hypertrophied left ventricle.

without there being any anatomic lesions demonstrable postmortem by our present methods. Just what the relation between albuminuria and nephritis is, I feel quite unable to say. Either can appear without the other, and in a chronic disease like contracted kidney we often see the albumin appear and disappear when we know that the anatomic lesions are fixed beyond the possibility of parallel changes. Our clinical inferences from the amount or percentage of albumin to the anatomic lesions in the kidney are often far too direct. Doubtless structure and function will prove, when fully known, to be only different aspects of the same fact, but at present our knowledge of structural anomalies is not fundamental enough to run parallel to the variations in functional capacity that manifest themselves in facts like albuminuria and casts.

TABLE VIII.—SENILE ATROPHY.

Case No.	Autopsy No.	Anatomic diagnosis.	Clinical diagnosis.	Urine.					Remarks.
				24-hour amount.	Spec. grav.	Albumin, per cent.	Urea.	Sediment.	
1	1162	Cancer of prostate with diphtheritic cystitis. Kidneys weight—177. Some foci of fibroid atrophy.	Retention of urine. Septic testis.	1600 c.cm. (average).	1015	Large trace.	30 grams (average).	No casts.	Age 86.
2	1089	General arteriosclerosis. Kidneys weight—195. Areas of fibroid atrophy; not extensive enough to call chronic interstitial nephritis.	Arteriosclerosis. Acute gastroenteritis.	500 c.cm.	1014	Slightest possible trace.	.....	Numerous hyaline and granular casts, with few oil drops and round cells adherent.	Age 90.
3	1062	Obliteration of inferior vena cava. Cysts of left kidney. Senile atrophy of right (focal).	Obliteration of inferior vena cava. Mitral regurgitation.	1000 c.cm. (average).	1016	Slightest possible trace.	2%	No casts, blood or fat in two examinations.	Age 82.
4	766	Cerebral hemorrhage. Senile atrophy of kidneys. Combined weight—269. Foci of fibroid atrophy microscopic.	Cerebral hemorrhage.	980 c.cm. (average).	1009	¼	¼ %. 6.6 grams.	Many hyaline and fine granular casts.	Age 65.
5	686	Gliomata of temporal and frontal lobes. Senile atrophy of kidneys. Combined weight—201. A few small areas of fibroid atrophy in the cortices.	Uremia.	.....	1022 (Average).	Slight trace to 0.1	1.15% (average).	Many hyaline and granular casts, with fat and fatty cells adherent. Few blood, epithelial and waxy casts. Many compound granule cells.	Age 69. Coma. Convulsions. No paralysis.
6	637	Atrophic cirrhosis. Gastric ulcer. Senile atrophy of kidneys. Combined weight—465 grams. Numerous stellate depressions. Increased consistency. "Histologically not remarkable."	Cirrhosis of liver.	750 c.cm. (average).	1021	Slightest possible trace.	17 grams.	Rare hyaline and granular casts, with round cells on it.	Age 65.
7	627	Pneumonia. Senile degeneration of kidneys. Combined weight—294 grams. Small areas of fibroid atrophy in cortex.	Pneumonia.	.....	1022	Very slight trace.	.....	Hyaline, fine, coarse granular casts, some with round cells adherent.	Age 49.
8	555	Gangrenous infarct of lung. Cardiac thrombus. Senile degeneration of kidneys. 255 grams combined. No miscroscopic examination.	Herpes zoster. Asthenia.	.....	1020	Trace.	.....	Few hyaline and granular casts.	Age 74.
9	557	Pneumonia. Mitral endocarditis. Senile atrophy of kidneys. Combined weight—245 grams. Microscopically; a few areas of fibroid atrophy.	Pneumonia.	.....	1015	Very slight trace.	.....	Fairly numerous hyaline and granular casts, often with small round cells and a small amount of fat adherent.	Age 56.
10	385	Acute cystitis. Fatty degeneration of liver. Senile atrophy of kidneys. Combined weight—184 grams. Microscopically; no general increase of connective tissue.	Alcoholism.	.....	1021	Trace.	.....	Many hyaline and fine granular casts, with cells and fat adherent.	Age 50. Coma. No fever. Leucocytes 39,000.

Fatigue states not usually classified as disease are capable of bringing into the urine a quantity of albumin and casts equaling that found in the majority of cases of anatomical nephritis such as I have tabulated above. Thus, Darling[3] reports .9 per cent of albumin in the urine of a member of a Harvard four-oared crew after a two-mile race, and five other men had from .25 to .5 per cent. under similar conditions, yet the albumin disappeared within a short time, and there is no evidence that any permanent damage was done to the kidneys. The sediment "contained correspondingly large numbers of hyaline and finely granular casts, many having renal cells and red blood corpuscles adherent. In many of the sediments there was also a considerable number of red blood corpuscles and an excess of leucocytes. The sediment in many cases was exactly that of the first stage of acute nephritis, and if examined without a knowledge of the conditions might easily have caused anxiety."

In view of the facts just mentioned and of those earlier tabulated, it seems probable that the albuminuria and cylindruria associated with many cases of nephritis may not depend directly on the anatomic changes which we describe under the name of nephritis, but on functional derangements of which we know little or nothing, and which may or may not accompany nephritis.

In cancer of the stomach the vomiting so often present may not depend directly on the cancer, but rather on the stasis and fermentation which are present in some, but not in all cases of cancer, and are also found in many non-cancerous diseases. Is it not as rash to predict anatomic nephritis because we find albumin and casts, even in large quantities, as it would be to predict gastric cancer from the presence of emaciation and vomiting? I think it may well be that the inference is no more justifiable in the one case than in the other.

What we directly observe and record in our diagnosis

3. Darling: Boston Medical and Surgical Journal, Sept. 7, 1899, p. 231.

of diseased conditions of the heart, kidney, stomach and brain is disturbed function, but from this to known anatomic alteration—temporary or permanent—the inference is indirect and often very uncertain.

THE ESTIMATION OF UREA.

In this part of the country a great number of useless urea estimations are made. I suppose the test still preserves some of the dignity and impressiveness which it possessed when it was thought that retained urea was the cause of uremia. On no other hypothesis can I account for the reverential care with which we still perform the urea test in cases and under conditions where it can not possibly yield us information of value.

What we measure in measuring urea is not the functional power of the kidneys, but merely their power to take out of the blood a certain portion of the urea there by the individual, and on the catabolism of the whole body. Absolute mathematical regulation of the diet extending over a period of several days preceding the urea estimation is essential if we are to make any valid inferences from this procedure. If this has been done we have taken one step in the direction of making a urea estimation of value; but it is not merely the amount ingested but the amount absorbed that we need to know, and this depends on so many factors—digestion, exercise, sleep, the amount of water ingested, the presence or absence of fever, vomiting or diarrhea, the presence or absence of cachexia, wasting disease or heart troubles, that without an elaborate study of these factors we can not estimate with any accuracy how much urea we ought to expect this individual, in this 24 hours, to eliminate by the urine, provided his kidneys were sound. Yet

TABLE IX.—ARTERIOSCLEROTIC RENAL ATROPHY.

Case No.	Autopsy No.	Anatomic diagnosis.	Clinical diagnosis.	Urine.					Remarks.
				24-hour amount.	Spec. grav.	Albumin, per cent.	Urea.	Sediment.	
1	1192	Prostatic hypertrophy. Chronic cystitis. Mitral and aortic sclerosis. Arteriosclerosis. Arteriosclerotic atrophy of kidneys. Focal atrophy with marked arteriosclerosis microscopically.	Stone in bladder. Nephritis.	1100 c.cm. average.	1016 average.	Large trace.	18 grams average.	Rare hyaline cast.	Age 79 years. Combined weight of kidneys, 200 grams.
2	348	Arteriosclerosis. Chronic passive congestion. Microscopic changes as above.	Pulmonary infarct. Arteriosclerosis.	950 c.cm. average.	1016	0.1	.....	Numerous hyaline, fine granular, coarse and brown granular; with cells and fat adherent.	Age 60 years. Combined weight of kidneys, 276 grams.
3	311	Arteriosclerosis (general). Foci of fibroid atrophy with thickened intima in the arteries. Microscopic changes as above.	Mitral regurgitation.	1500 c.cm. average.	1015 average.	Trace.	25 grams average.	Few hyaline and granular casts. At times no casts.	Age 62 years. Kidneys' weight, 330 grams.
4	307	Same as in No. 3.	Cerebral embolism.	1000 c.cm.	1018	½	2.27%	Many hyaline, fine and coarse granular casts. Some very large and fatty. Some with blood and cells adherent.	Age 60 years. Kidneys' weight, 225 grams.
5	297	Multiple myeloma. Arteriosclerosis. Microscopic changes as above.	Multiple myeloma. Albumin and albumose present.	1030 c.cm. average.	1012 average.	Slight trace.	.....	Hyaline, granular and waxy casts. Some with many oil drops adherent.	Age 54 years. Kidneys' weight, 249 grams. Albumose ¼%.
6	277	General arteriosclerosis. Thrombus in lateral sinus. Microscopic changes as above.	Cerebral hemorrhage.	....	1011	Large trace.	.....	No casts found.	Age 72 years.
7	273	Cancer of pancreas. Syphilis. Arteriosclerosis. Microscopic changes as above.	Cancer of biliary passages.	.....	1015	Large trace.	1.5%	Many hyaline, fine and coarse granular casts of small and large diameter, with blood, fat and cells adherent. Few fatty casts.	Age 67 years. Kidneys' weight, 270 grams.
8	257	General arteriosclerosis. Microscopic changes as above.	Postoperative dementia.		1018	⅛	.....	Few hyaline and coarse granular casts with fat and cells adherent.	Age 43 years. Kidneys' weight, 240 grams.
9	251	Arteriosclerosis with mitral disease. One coronary thrombosed. Microscopic changes as above.	Chronic diffuse nephritis. Enlarged heart.	390 c.cm.	1018	⅛	2%	Many hyaline casts with fat; fatty cells and compound granule cells adherent. Blood and cells free and on casts. Some casts very dense. Casts within casts.	Age 49 years. Kidneys' weight, 360 gram.
10	194	Arteriosclerosis with aortic and mitral disease. Microscopic changes as above.	Myocarditis. Hydrothorax.	1000 c.cm. average.	1020 average.	Slight trace.	.....	Many hyaline and granular casts with cells adherent.	Kidneys' weight, 375 grams.

present. It has been abundantly proved by the researches of von Noorden and others that, in chronic nephritis of any type, the kidney may excrete some substances perfectly well, others less well and still others very poorly. The excretory power is distinct and specific for each substance, and when we know, for example, that urea or methylene blue is poorly excreted, we can not immediately infer that the kidney is likewise deficient in the power to excrete other substances.

Yet, since urea is certainly a very important urinary constituent we might still set store by the knowledge of the amount excreted in the urine, if thereby we could measure directly the power of the kidney to excrete this one specific substance. But we are apt to forget that the amount of urea excreted in the urine depends not merely or even primarily on the functional power of the kidney, but also on the amount of nitrogenous food absorbed unless we know all this we can not tell whether an absolutely low urea excretion really is low for this individual under these conditions.

I desire next to enumerate and explain more in detail the conditions which affect the output of urea and prevent our being able to determine thereby the functional power of the kidney.

(a) *Exercise* breaks up the albumins of the tissue and increases the output of urea. When a patient is put to bed and deprived of all exercise his urea excretion is more or less diminished—the diminution varying a good deal in individual cases according to conditions which we do not understand.

(b) The free *ingestion of water,* or diuresis otherwise produced, increases the amount of urea excreted, and anything that tends to send water out of the body

through other channels (vomiting, diarrhea, sweat baths, purgation) diminishes the excretion of urea.

(c) If there is disturbance of *digestion or assimilation*, part of the nitrogen taken in with the food reappears in the feces and is subtracted from the urinary output of urea. Obviously this is a factor, the degree of whose disturbing operation is very difficult to measure.

(d) *The circulation* through the kidney also influences to a considerable extent the output of urea, and if the heart is not doing its work well (as so often happens in nephritis) the urea excretion will thereby be affected more or less—how much we can not estimate.

(e) ***Spontaneous nitrogen retention*** leading to decreased urea-output is not very rare either in health or in disease, quite independent of any renal disease or of any other measurable influence.

(f) *In nephritis,* as v. Noorden and others have shown, there are periods of good urea excretion alternating at varying intervals with periods when urea is deficient in the urine, so that a great deal depends on the chance coincidence of the time of our examination with one or another of these periods.

In the majority of nephritic cases which I have studied the amount of urea was noticeably low only when the amount of food ingested was small and the amount absorbed still further diminished by the lack of proper exercise or sleep, and the presence of vomiting, sweating and diarrhea, natural or artificial.

In the vast majority of cases we can not spend the time necessary to make a study of the patient's metabolism and of the other factors above mentioned, yet without all this our urea estimations are not worth even the small amount of time which they consume. Supposing that no disturbing factors such as vomiting, sweating or purging are present, suppose that digestion, assimilation, sleep and exercise are normal, and the amount of water ingested is known and allowed for, the least we can do after getting the patient into a condition of nitrogenous equilibrium is to measure the food nitrogen, the fecal nitrogen and the urea[4] of a certain 24 hours and then calculate whether the urinary nitrogen is sufficient.

The necessity for estimating the fecal nitrogen is due to the fact that, roughly speaking: **Food nitrogen minus fecal nitrogen equals urinary nitrogen.**

But it may be said that although urea estimations, as ordinarily performed, can give us no very accurate idea of the renal function, they may still be valuable, because we can obtain from them a rough, general estimate of the kidneys' power. This is true, but the same estimate can be made as accurately and far more quickly by noting the specific gravity and the 24-hour quantity of urine. These simple physical measurements are, in my opinion, the best and most accurate as well as the simplest and quickest methods of testing the renal functions that are at the disposal of the clinician to-day.

The quantitative estimation of the other urinary solids—uric acid, phosphates, chlorids and sulphates—are, in my opinion, equally useless to the clinician. We may get some information from such estimations, but none that is worth the time they consume.

TABLE X.—FATTY DEGENERATION OF KIDNEYS (EXTENSIVE).

Case No.	Autopsy No.	Anatomic diagnosis.	Clinical diagnosis.	URINE.					Remarks.
				24-hour amount.	Specific gravity.	Albumin, per cent.	Urea, per cent.	Sediment.	
1	1145	Thymic asthma. Thymic hyperplasia. Fatty degeneration of liver and kidneys (marked). Otherwise normal.	Intestinal toxemia, morphin poisoning.	.....	.....	Slight trace.	.75	Few hyaline casts. Many fine granular casts; many with round cells adherent.	Age 18 months. Kidneys' weight, 76 grams.
2	828	Parturition. Anemia. Fatty degeneration of kidneys. No other lesion.	Chronic nephritis. Anemia.	600 c.cm. average.	1013 average.	¼	1.4	Occasional hyaline and fine granular casts, with fat and renal cells adherent.	Age 34 years. Kidneys' weight, 294 grams. Headache. Nose bleeds. Vomiting. Hands and face swollen. Normal labor. Red cells, 800,000.
3	606	Pneumonia. Fatty kidneys and liver. No other lesion.	Pneumonia. Alcoholism.	.....	1012	0.16⅔	.....	Many hyaline and granular casts, often with blood, round cells or fat adherent. Few blood casts.	Age 37 years. Kidneys' weight, 395 grams.
4	269	Arsenical poisoning. Fatty liver and kidneys.	Arsenical poisoning. Anuria-nephritis.	No urine passed.	.....	.....	.....	.....	Age 27 years. Kidneys' weight, 246 grams.
5	235	Fibrino-purulent pleurisy; pericarditis and peritonitis. Fatty liver and kidneys.	Pneumonia.	.....	.....	0	.....	No casts or fat.	Age 4 years. Kidneys' weight, 145 grams.
6	206	Extensive fatty metamorphosis of liver and kidneys. Acute endocarditis.	None made.	.....	1015	Large trace.	.....	No casts.	Adult. Kidneys' weight, 320 grams.
7	177	Cerebral hemorrhage. Cirrhotic liver. Fatty kidneys (moderate).	Cerebral hemorrhage.	730 c.cm.	1020	¼+	.....	Hyaline and fine granular casts, some with round cells adherent.	Adult. Kidneys' weight, 419 grams.

CASTS.

With regard to the examination of urine for casts the following points seem to me of importance:

1. Hyaline and granular casts in small numbers may be demonstrated in the urine of healthy adults, provided the centrifugal machine is used and a considerable amount of urine employed. The use of the centrifugal machine has not only brought out the fact that casts are not infrequently present in normal urine, but has greatly increased the number to be demonstrated in pathologic urine, so that it is difficult to make any comparisons between the modern urinary examinations, many of which are made with centrifugalized urine, and older examinations in which the sediment was simply allowed to settle.

2. Sufficient attention, I think, has never been paid to the studies of F. C. Shattuck on the urine of healthy persons over 50 years of age, in which he showed that more than two-thirds of all such persons pass urine containing a slight trace of albumin with hyaline and granular casts.

3. In the great majority of all written reports of

4. Assuming the urea to represent from 83 to 93 per cent. of the total urinary nitrogen.

urinary examinations mention is made of renal cells, either free or on casts. This phrase seems to me unjustifiable. One sees in the urine small round or oval cells, some mononuclear, some polynuclear, free or attached to casts. The mononuclear cells we are apt to call renal cells, but we have no reason to do so. They may very well be lymphocytes or cells of some other variety. The use of the words renal cell gives an appearance of precision to our urinary diagnosis which is far in excess of the truth. We should report small, round cells, mononuclear, or polynuclear; this is all that we know.

WHAT METHODS OF EXAMINING THE URINE ARE MOST VALUABLE IN THE DIAGNOSIS OF NEPHRITIS?

In my opinion the microscopic and chemical examinations of the urine are of much less significance than the physical. Microscopic and chemical changes are relevant rather to temporary alterations of function than to alteration in anatomic structure. When we are concerned chiefly with the question: Has this patient a nephritis or not? what we need most to know is simply how much urine does he pass, by day and by night, and what is the weight of that urine? These facts, together with the presence or absence of dropsy, retinitis, cardiac hypertrophy and uremic manifestations, constitute nearly all the evidence at our disposal. The presence or absence of albumin and casts, and the deficient excretion of some or all of the urinary solids are data of relatively slight and vague significance in the diagnosis of nephritis at the present time.

The increase in the relative amount of night urine—nocturnal polyuria—is, in my experience, one of the most reliable manifestations of a chronic nephritis, especially in its earlier and middle stages.

SUPPLEMENTARY METHODS FOR THE EXAMINATION OF THE RENAL FUNCTION.

1. The use of methylene blue. 2. The use of phloridzin. 3. Cryoscopy.

The Methylene Blue Test.—In some diseases of the kidney methylene blue (injected subcutaneously or introduced by mouth) is eliminated more slowly and irregularly than in health, while in other forms of nephritis we have increased renal permeability, and the blue is excreted more rapidly than normal. In view of these facts, various French observers have tried to use the rate of elimination of the pigment as a test of renal function. The test is not of clinical value, however, because we can not judge of the permeability of the kidney for other solids from its permeability for a single substance like methylene blue. The rate of absorption from the subcutaneous tissues or from the gastrointestinal tract is another factor whose variations we can not measure, particularly in cases associated with edema. The pain produced by the subcutaneous injection of the drug is not to be disregarded, as I have found to my cost in experimenting on myself.

On the whole this method has little if any place in clinical diagnosis.

The Phloridzin Test.—The glucocide phloridzin, when injected subcutaneously (5 milligrams in watery solution), produces glycosuria by direct action on the renal epithelium. Assuming that the amount of sugar drawn from the blood under these conditions by the kidney is in proportion to the number of functionally active cells, we may attempt to estimate the functional power of the kidney by testing the amount of sugar excreted in the urine after a standard dose of phloridzin and the rate of its excretion.

This test seems to be of some value in the diagnosis of the functional power of one kidney (stone, tuberculosis, etc.) when we collect the urine from each kidney separately and have the sound kidney as a control, but in nephritis affecting both kidneys, as is almost always the case, the test is of little value, because the normal quantity of sugar and the rate of excretion following the injection of a standard dose of phloridzin vary within wide limits. Only if the sugar fails to appear or appears only in traces can we be sure that serious renal disease is present. In such cases the diagnosis can usually be made by the ordinary methods.

Cryoscopy.—Cryoscopy, or the determination of the freezing point of blood and urine, was introduced into medicine by Koranyi in 1898, and has been extensively taken up by the French, who have made it the basis of much speculation. The method depends on physicochemical generalization usually associated with the name of Raoult. According to this rule, the freezing point of any liquid is lowered below that of water in proportion to the number of molecules dissolved in it, no matter what the weight or constitution of these molecules may be. From the freezing point of a given urine we are thus supposedly enabled to judge of the number of molecules excreted, and so of the functional activity of the kidney. The freezing test itself is not a lengthy or difficult process, but it is made considerably more tedious by the necessity of a quantitative estimation of the amount of chlorin in the urine examined. For we are concerned to know not the total number of molecules excreted, but only those that represent metabolism. Now, sodium chlorid passes unchanged into the urine, and as the amount of it affects the freezing point notably we need to estimate this amount and to make allowance for its effect on the freezing point of the urine. By subtracting the estimated lowering of the freezing point, due to the chlorin molecules, we get a figure representing the amount of lowering due to those substances in which we are primarily interested, namely, those concerned with metabolism. Of course, the weight of the individual and the 24-hour quantity of the urine must be also considered.

But before we can make any clinical deduction from variations in the freezing point thus estimated, we must take account, just as in urea estimations, of the amount and kind of nourishment which the body absorbs, and since metabolism depends not simply on what is eaten, but on what is absorbed, and so on the condition modifying absorption, we can not draw any deductions of clinical importance without knowledge of the metabolism in the individual case.

Further than this, there are many circumstances which may interfere with the accuracy of the test. Allowance has to be made for the influence of exercise and sleep, of vomiting, sweating or diarrhea, and of pregnancy, while the effects of a milk diet or of the changes taking place at the end of an acute infective disease may lower the freezing point in a way closely simulating the results of nephritis.

According to Koranyi, the chief advocate of cryoscopy, the test is unreliable when there is a retention of water (dropsy or latent dropsy), and when there is marked anemia or cachexia.

H. Strauss, in a lucid monograph,[6] has well brought out the multiplicity of conditions that have to be taken account of before we can draw any diagnostic deductions from the results of the test—even when the freezing

6. Bedeutung der Kryoscopie, Berlin, 1904.

point of the blood (for which we need from 15 to 20 c.cm. of blood) is simultaneously determined. Without the latter it is still more difficult to draw true conclusions from the results of the test. Even uremic cases may show no considerable modification of the freezing point of the blood or of the urine, and very marked changes may occur without the presence of any kidney disease at all.

Including the estimation of chlorin, the process is itself not a quick one. And, if we bear in mind, as we ought to do, the influence of diet, exercise, sleep, and of such accidents as vomiting and diarrhea, we shall have to confess the method is not at present clinically available in many cases.

Many of the above difficulties do not apply to the use of cryoscopy to determine, in surgical affections of one kidney, the functional power of the other before deciding about operation. It is in this field that cryoscopy has found most enthusiastic support and received its widest application. If we catheterize the ureters and determine the freezing point and chlorin in each of the specimens so obtained we are testing urines secreted under conditions which are precisely the same up to the point at which the kidney itself begins to functionate. In such cases, whatever the metabolism of the individual, however his blood may be influenced by sweating or vomiting, all influences will be brought to bear equally on both kidneys, and any differences found to exist between two specimens of urine flowing from the ureteral catheters must depend on differences in the kidneys themselves and not on any other condition.

SUMMARY AND CONCLUSIONS.

Although the number of cases which I have studied is not large, it is, I think, sufficient to warrant the following conclusions:

1. There are many cases of acute glomerular nephritis which can not be recognized by any of the methods of examination known to us.

2. In some cases of subacute and chronic glomerular nephritis, our diagnostic resources are likewise at fault, but in the great majority of cases here studied, the condition of the urine taken in connection with other features of the clinical picture, enabled us to anticipate the autopsy findings. Our success in the diagnosis of chronic glomerular nephritis as almost as constant as our failure in the acute cases.

3. When we face the group of chronic interstitial cases, our diagnostic resources appear to be neither as sufficient as in chronic glomerular nephritis, nor as inadequate as they were shown to be in the acute cases.

In about one-third of the cases the diagnosis was correctly made before death.

4. Among other conditions mistaken for nephritis, owing to the implicit reliance in the urinary findings, we find that the senile and arteriosclerotic degenerations are not infrequently the cause of mistaken diagnoses of chronic nephritis, while in conditions involving passive congestion or acute degeneration of the kidney, the urine occasionally simulates that of acute nephritis. Even in cases where no lesions are to be found at autopsy, the urine is occasionally highly albuminous and full of casts.

5. In our ordinary urinary examinations, common errors are: (*a*) The attempt to estimate urea without any accurate knowledge of the patient's metabolism. (*b*) The statement that renal cells are present when all that we know is that we have seen small mononuclear cells, perhaps belonging to the renal tubules, perhaps not.

6. Cryoscopy and other attempts to test more directly the renal permeability are not as yet capable of supplementing in clinical work the older methods of examination in the diagnosis of nephritis.

The vast majority of estimations of urinary solids, including urea, are in my opinion a waste of time, since they are not, and in most cases can not be made, part of a general metabolism experiment.

The attempt to estimate the anatomic condition of the kidney by the measurement of albumin and the search for casts is fallacious in the extreme.

The most reliable data about the urine are those most simply and quickly obtained, the twenty-four hour quantity, the specific gravity and the color.

IDIOPATHIC EPILEPSY.

OBSERVATIONS ON ITS TREATMENT.*

DANIEL R. BROWER, A.M., M.D., LL.D.,
Professor of Mental and Nervous Diseases, Rush Medical College,
CHICAGO.

This paper is not intended to be an exhaustive treatise on the therapeutics of this disease. The ideal treatment for epilepsy is that of the Craig colony at Sonyea, and our best efforts should be given to establishing such colonies at the earliest possible moment in every state in which they do not already exist. After we thus make provision for many of these unfortunate people, however, there will still remain a large number who will require treatment at their own homes or in our offices.

In considering the therapeutics of epilepsy in general, it is well to bear in mind the fact that there are spontaneous cures, and one of these cases was brought to my attention for the first time about twenty years ago. I was called to see a man of 60 in convulsions. He had had an attack of grip, with high temperature and suppression of urine; the convulsions were soon found to be uremic. On inquiring into his history, I ascertained that he had been an epileptic from early youth until the age of about 20, when he left his home in London for America, having been assured by his physician that an ocean voyage would cure him. He landed in New York, and a short time afterward came to Chicago, where he was successful in business, and from the date of his leaving the port in England until the time of his attack of grip, that is, during a period of about forty years, he had had no manifestations whatever of the disease. In this case the ocean voyage is credited with having effected a cure. The impress of his neurosis was manifest in two of his children, of whom one died insane and another of delirium tremens after years of inebriety.

I have seen other cases in which there was the same spontaneous arrest of the disease. Such cases give reputation to many means of cure, and many things that can not possibly have had anything to do with the results are credited with being cures for epilepsy. There is no more difficult problem in medicine than to separate the *post hoc* from the *propter hoc*. Another difficulty that surrounds the therapeutics of the case is the fact that epilepsy is a symptom, not a disease. It may be the only symptom manifest, as in idiopathic or essential epilepsy, or it may be one of many symptoms, as in an organic brain disease. Another difficulty in the way of

* Read before the American Association for the Care and Treatment of Epilepsy, Boston, 1904.

a scientific therapy is the want of a positive pathology, but in this matter we are making headway. The theory of that gifted student of epilepsy—Echeverria—that the medulla oblongata is the only seat of epilepsy, I think we all have abandoned, as we have many other theories, and that we are now of one mind that the cerebral cortex is the seat of the disease, and that hyperplasia of the neuroglia, with the destruction of neurons, especially of those that originate in the second cortical layer, sooner or later is present, and that the whole is due to some toxic element not yet discovered. When this has been discovered, then and only then can we discard empiricism in the treatment of this disease.

PREVENTION.

I do not think sufficient attention is given to prevention in those patients who have an hereditary predisposition. These neurotic children have convulsions in infancy, and but little attention is paid to them. A physician may be called at the time, but the convulsion is over, and the case is dismissed from further attention. Such cases demand his most earnest efforts to discover the cause and to remove it, and then to see that the child receives the kind of education and medication that will insure a vigorous physical development and a well-regulated mentality. Home training is not always the best for such a child, for the neurotic condition is an inheritance from mother or father, and this fact may create an environment by no means conducive to the end desired.

Some cases of epilepsy are traumatic and in some the result follows because surgeons do not resort to exploratory operations early, with a view of preventing serious consequences, but delay operation until after convulsions have occurred. It is impossible to estimate the damage done to the brain by trauma. It frequently happens that there is no due proportion between the injury and the magnitude of the mischief the cranium has sustained; with the present modern surgical methods there is no possible danger that can result from an exploration, and it is often demanded, I am sure, in these neurotic subjects.

Before laying the foundations for therapy, every case demands a most thorough investigation. No part of the body should be overlooked in the examination. The blood, the urine, the feces, every possible source of reflex irritation in eyes, nose, mouth, vagina, uterus, penis, rectum, should be ascertained, and often surprisingly valuable information is thus obtained.

The prevention of individual convulsions is a matter of great importance, and the epileptic who has an aura is fortunate, for then there is often the opportunity of arresting impending attacks. The seizures after a time become a habit of the body. The cause may be removed, and the habit may continue, or a minimum of toxicity may become sufficient to discharge the cortical cells, and therefore every attack prevented is a step toward cure by breaking up a bad habit. The pearls of nitrite of amyl of proper size should be carried by every epileptic who has an aura, and at the proper moment they should be used.

These attacks can sometimes be averted by other means. A patient under my care had an aura that began in his right hand. He carried around his wrist a slip noose of silk thread, and when he felt the oncoming of the aura, he quickly tightened it, and if he did so promptly he could stop the progress of the attacks. He eventually obtained relief, and I am of the opinion that his perseverance in the breaking up of the sequence had as much to do with it as did the internal medication he received.

In marking out a line of treatment, it must be borne in mind that in the pathogenesis of epilepsy there is an autointoxication, an increased irritability of the nervous system, a deficiency of vasomotor tonus, and of circulatory capacity, and, lastly, a cerebral sclerosis, and in the plan of treatment each must be considered in due proportion, even though it is possible that the first factor is the foundation of the other three. The autointoxication, in the majority of cases, has its origin in the gastrointestinal tract, and to minimize this there must first be a careful regulation of diet. For this purpose no special and universally applicable diet table is either necessary or desirable, as the digestive capacity and necessities of each patient must be determined. The exclusion of meat, which is advocated by some, is a serious error. The majority of these patients are gormandizers; they eat voraciously, and masticate imperfectly; these conditions must be corrected, they must be taught abstemiousness, and slow and thorough mastication.

I was consulted some years ago by a physician engaged in a large country practice who developed epilepsy, and whose treatment on ordinary lines had been a failure. On investigating his case, I found that after his long rides at night it was his custom to eat a very hearty luncheon, often of very indigestible food, and the convulsions invariably occurred at night. Supposing this had much to do with their manifestation, I put him on a diet of milk and crackers exclusively, continued the bromid treatment he was then taking, and the convulsions, from having been two or three a week, rapidly ceased, and in six months he thought himself cured; he again began his habit of midnight luncheons, and the convulsive seizures recurred. On returning to his abstemious diet they again ceased, and for many years, under a properly regulated diet, he has been free from these attacks.

The condition of the stomach, especially the want of muscular tone, with more or less dilatation, is sometimes at the foundation of this toxicity; and then gastric lavage is indispensable. Insufficient intestinal elimination is a very common condition; so much so do I regard it that even when patients come to me, telling me that they have a daily habit of evacuation which they regard as ample, unless there is some contraindication, I order them a compound cathartic pill (U. S. P.), at least once a week, and frequently direct colonic flushing with normal saline solution. These measures of themselves are often inadequate, and intestinal antiseptics must be added to the treatment. Salol has given me the best results, and I usually combine it with the extract of phytolacca. The two drugs are placed in capsules and given before meals. Phytolacca decandra is a drug not sufficiently appreciated by the profession at large. In that complex error in metabolism that we recognize as rheumatism, it is of undoubted value, and in the errors of metabolism with which we are now contending I know it is sometimes useful.

The increased irritability of the nervous system is best combated by the bromids, the sodium bromid being less depressing to the circulation and less disturbing to the digestion, is probably the best. I have rarely seen any advantage from the mixture of several bromids, although Brown-Séquard's formula is sometimes very useful; it contains the potassium and ammonium bromids. While

the bromids are the most useful of all remedies in combating the irritability of the nervous system, yet we all know that great damage has been done by their excessive use. Epileptic insanity is vastly more frequent to-day than it was before the introduction of the bromids in the treatment of this disease, but it is their excessive use that produces this result. Sixty grains a day is a quantity that should seldom be exceeded except for a special reason, and for a short time only. In nocturnal epilepsy a full dose may be given at bedtime, but in the great majority of cases the proper dose should be given three times a day, after eating.

The disagreeable bromid eructation is much diminished by the addition to the mixture of an alkali. In the Brown-Séquard formula, previously mentioned, the alkali is the carbonate of potassium. When patients can afford it, the drug can be taken in an alkaline water, such as Vichy, which is the ideal water for this purpose; the drug should be given in a large quantity of water, and always after meals. The constitutional effect of the bromids is increased by eliminating the chlorid of sodium as much as possible from the dietary. If the 60 grains of bromid a day do not arrest the paroxysms, then I add to the treatment the fluid extract of solanum carolinense, in one-half to two dram doses, in the bromid mixture. In some cases in which the bromids disagree, this drug alone will control the seizures. Cases that resist this combination will sometimes yield if acetanilid is added to the treatment; this may be placed in the capsule with the salol and phytolacca before meals. Some cases of nocturnal epilepsy that will not yield to this method of treatment are benefited by moderate doses of chloral or chloralamid at bedtime.

The circulatory and vasomotor defect, so manifest in many cases, often can be improved by the use of the fluid extract of adonis vernalis, and this can be added to the mixture already mentioned of bromids and solanum. This drug—adonis vernalis—has all the properties of digitalis without its untoward effects; it does not disturb the stomach, it has no cumulative effect, and it has some sedative influence on the nervous system. It also has marked diuretic properties, and thereby relieves the system of some of its accumulated toxins.

Strychnia is also a valuable remedy in meeting this indication, but it requires to be given in larger doses than are usual to secure the best results. In a case in which the bromids had been given in very large doses, so that the patient—a young, pale, anemic subject—showed positive evidences of bromism, face and back being covered with acne, and mental stupor very manifest, the attacks continued unabated. On the withdrawal of the bromids and the administration of the sulphate of strychnia in gradually increasing doses, until the one-twelfth of a grain was taken once in eight hours, the attacks, which had been daily, gradually ceased; then the dose was gradually diminished. Some strychnia, however, was continued for five years, and now, after a period of eighteen years, there has been no recurrence of the disease.

Cerebral sclerosis is an indication for the use of alteratives. The iodids diminish the rapidity of its development and increase the activity of the bromids, and the iodids, as Brown-Séquard has taught us, can well be added in small doses to the bromid formula already mentioned. Another valuable drug in the sclerotic process in brain, liver and kidneys, is the chlorids of gold and sodium rubbed up dry in a capsule with pulverized resin guaiac; this can be given with advantage, alternating with the capsule of salol and phytolacca already mentioned. This gold salt is not only antagonistic to the sclerotic process, but it is a mild cerebral stimulant; and the guaiac, like phytolacca, in some way corrects errors of metabolism. The great importance of a suitable occupation, of a reasonable amount of rest and of exercise, and a careful attention to hygiene must not be overlooked in the therapy of these cases.

Whatever plan of treatment may be determined on, and the four indications that I have specified may be met in different ways by each of us, the treatment, to be effective, must be continued for a space of at least five years. Much of the therapeutic confusion that prevails in this disease results from too early reporting of cases as cures; a surgeon operates to-day, the patient having frequent convulsions; no convulsions occur for a month or two; the case is reported as a cure from some surgical operation, and the same is true of the various lines of drug treatment. No epileptic can be regarded as cured until there has been at least five years' intermission in the epileptic manifestations.

Special Article.

IMMUNITY.

CHAPTER IX.

THE "STRUCTURE" OF TOXINS AND ANTITOXINS AND THE NATURE OF THE TOXIN-ANTITOXIN REACTION.

Biologic Analysis.

Since it has not been possible to obtain the microbic poisons in a pure form, ordinary chemical analysis can give no indication of the composition of the toxin molecule. We have practically no means of studying the nature of toxin except through the biologic experiment, i. e., its effect on animals and on animal cells.

Neutralization of Toxin by Antitoxin.

Investigations have shown that when toxin and antitoxin are mixed in suitable proportions in a reagent glass, a union occurs between the two; a new, non-toxic substance is formed. The mixture contains neither demonstrable toxin nor antitoxin: that is to say, when the mixture is injected into susceptible animals they suffer no intoxication (disappearance of toxin), or if some fresh toxin is added to the neutral mixture none of the fresh toxin is neutralized (disappearance of antitoxin). That a loose chemical union may occur between toxin and antitoxin has been demonstrated in another way, in relation to pyocyaneus toxin and snake venom. Toxins are usually destroyed at lower temperatures than their antitoxins, but in the two instances cited the antitoxins are destroyed at the lower temperature. It was found that when neutral mixtures of pyocyaneus toxin (Wassermann) or of venom (Calmette) with their antitoxins were heated to the proper temperature the solutions again became toxic. This indicates that in the toxin-antitoxin reaction neither is destroyed, but that union or binding occurs: a union which, at least in these instances, may be dissociated by simple means.

Chemical Nature of the Reaction.

In further support of the view that the union is chemical in nature are the facts that: 1, neutralization takes place according to the law of multiple proportions, i. e., ten times a given amount of antitoxin will neutralize exactly a proportionate amount of toxin; 2, neutralization is more rapid at warm than at cold temperatures; and 3, more rapid in concentrated than in dilute solutions. These are some well-known laws of chemical reactions.

"Emil Fischer has shown that in the ferments, definite

atom-groups of special configuration are present which above all else are requisite for the whole phenomenon (of fermentation). Only such substances as possess a group to which the ferment group corresponds, as lock to key, are subject to the action of a particular ferment." This applies to the action of a particular ferment on only one kind of substance.

Ferments.

Having this conception in mind, Ehrlich assumes that union occurs between toxin and antitoxin through a special atom group which the toxin molecule possesses, and which fits into, or corresponds specifically to, another atom group in the antitoxin molecule. These are spoken of as the binding or haptophorous groups (haptophores) of the molecules. The haptophorous group of the toxin is highly specific since a toxin can be neutralized only by its own antitoxin, and naturally the haptophorous group must be equally specific.

Haptophores.

The toxic function is supposed to reside in a particular chemical group of the toxin molecule, and this group has been called by Ehrlich the toxophore, or zymotoxic, or zymorphous group, the last two terms having reference to a supposed ferment-like action of the toxin. There is considerable experimental evidence to prove that the toxin molecule does contain such a toxophore atom complex, the following being the essential observation: When a toxin, as that of diphtheria, is first prepared, its lethal dose for guinea-pigs is determined, and also the amount of antitoxin which is required to exactly neutralize this dose. In the course of subsequent months, experiments show that the virulence of the toxin has decreased. One might suppose in view of this fact that the amount of antitoxin required for neutralization of the toxin contained in the original fatal dose would be correspondingly less; but, on the contrary, exactly the same amount is required for complete neutralization as when the toxin has its original strength. The toxin, therefore, has retained its original binding power for antitoxin, although it has lost a large share of its toxicity; that is to say, the haptophore group of each toxin molecule remains intact, while the loss of toxicity may be referred to the alteration or disappearance of a portion of the toxophore groups. Toxins which have undergone this change are called toxoids.

Toxophore.

Toxoids.

That the non-toxic toxin, or toxoid, still possesses the haptophore group is also shown by the fact that it may be used for the production of antitoxin. Since antitoxin can be produced only through the toxoid uniting with the cell it follows that the toxoid retains its haptophore.

Immunization with Toxoids.

A toxin entirely free from toxoids has never been observed, since even during the few days required for its preparation a certain amount of toxoid is formed.

Much additional information concerning the nature of toxin has been gained by experimenting with mixtures of toxin and antitoxin, in which the two are present in varying proportions. This is the "partial saturation" method of Ehrlich. Through a vast number of experiments Ehrlich obtained information which permitted him to estimate that 200 "binding units" are represented in the amount of diphtheria toxin (hypothetically pure) which is exactly neutralized by one antitoxin unit. If the entire amount of antitoxin, i. e., 200/200, is added to the amount of toxin in question, complete neutralization of the latter, of course, occurs. In case the toxin is entirely pure, 199/200 of the antitoxin unit would destroy all but 1/200 of the initial toxicity; and 150/200, or 100/200, or 75/200, etc., of the antitoxin when added would permit corresponding degrees of toxicity to be demonstrated through animal inoculations. It was found, however, that neutralization according to this simple scale did not take place. The results were complicated, and Ehrlich has found it convenient to express them graphically in the form of the "toxin spectrum" (Figs. 1, 2, 3 and 4). For example, let 199/200 of the antitoxin unit be added to the proper amount of the toxin, 198/200 to another similar amount, 197/200 to another, etc., down to 150/200. In the last mixture, 50 out of the 200 binding units which the toxin possesses are free, and these 50, rather than some other 50, are free because they have less affinity for the antitoxin than the 150 units which were bound. It has been found that those units which first become free are much less toxic than a corresponding amount of the original toxin. It was thought that they might have lost their toxophore groups, i. e., that they were toxoids; and because of their weak affinity for antitoxin they were called epitoxoids. It was found, however, that they possessed a rather constant though low degree of toxicity and that the toxic action was characteristic. Injection was followed by some local edema,[1] then by a long incubation period, and finally by cachexia and paralysis. On account of this characteristic toxic action and the long incubation period, Ehrlich has concluded that the so-called epitoxoid is in reality a separate toxin secreted by the diphtheria bacillus. This he now designates as toxon[1] in order to distinguish it from that other constituent of diphtheria bouillon, the toxin, which causes the acute phenomena of diphtheria.

Partial Saturation Method of Study.

The Toxin Spectrum.

Epitoxoids.

Toxon.

Let one now add still smaller amounts of the antitoxin unit to the 200 binding units of the toxin. When 149/200 are added it is found that a certain amount of true toxin remains free, and moreover is free in direct proportion to the amount of antitoxin withheld. Consequently when but 50/200 antitoxin unit is added the amount of free toxin corresponds to 100 binding units. If true toxin only remained a continuation of the experiment would show toxin equals 150. It could then be said that the constitution of this toxin is: toxin 150 and toxon 50. However, it may be found that as 49/200, 48/200, etc., to 0/200 antitoxin unit are added, no increase of free toxin is found, although the antitoxin added has been bound. Therefore, the 50 toxin binding units which have the greatest affinity for antitoxin are non-toxic; i. e., they are toxoids, and since they have the maximum affinity for antitoxin they are called protoxoids.

Protoxoids.

It has been assumed also that a toxoid may exist which has an affinity for antitoxin exactly equaling that which toxin possesses; this, as yet purely hypothetical constituent, bears the name of syntoxoid.

Syntoxoids.

The above appears in literature as an example of the constitution of a toxin (diphtheria). Figure 1 is a graphic representation of the toxin just described. Probably no two toxins have the same constitution. The toxon zone, for example, could well be much larger in the bouillon of one diphtheria culture than in another.

Refinements in experimentation show that even the true toxin is not uniform in its virulence and its affinity for antitoxin. Accordingly a prototoxin, a deuterotoxin and a tritotoxin may be recognized by this same partial saturation method. (See Fig. 2). For example, it may be found that when a portion of the antitoxin unit, between the limits of 149/200 and 125/200, is withheld, a toxin is left

Proto-, Deutero- and Tritotoxins.

1. The existence or non-existence of toxons has excited a great deal of discussion among investigators. The great Swedish chemist, Arrhenius, has recently given much attention to toxins and is applying the principles of physical chemistry to the study of toxins and antitoxins. It is a well-known fact that some chemical substances, when in solution, have the power of breaking up into their constituent parts; thus sodium chlorid breaks up in part into sodium and chlorin, as sodium or chlorin ions or electrolytes. The dissociated sodium and chlorin may then enter into combination with any other suitable substance which may be present. Arrhenius holds that this is the case with the toxin-antitoxin molecule, that it may to a certain extent again break up into separate toxin and antitoxin. He believes that this dissociated toxin is the substance which Ehrlich has been calling toxon. Madsen, who formerly had done much work with toxons, has now joined with Arrhenius in support of the dissociation theory. In spite of the reasonableness of this theory Ehrlich and his followers continue to uphold the toxon as an independent toxic substance, and have published additional experiments to support their position.

free which is less virulent than that remaining free between the limits of 124/200 and 100/200; and from this point on the new unbound toxin may be still more virulent. The first would be tritotoxin, the second deuterotoxin and the third prototoxin.

A "spectrum" having been worked out for a toxin when fresh, an examination made some time later, a year for example, may show many changes. The prototoxin zone and portions of the deutero- or tritotoxin may also have disappeared because of toxoid formation. These changes have led to the recognition of an alpha and a beta modification of the toxin portions. The alpha modifications of all three toxins readily become toxoids. Only the beta modification of the deuterotoxin remains constant. The toxon portion also remains relatively intact (Figs. 2, 3 and 4).

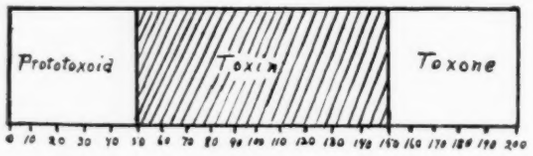

Figure 1.

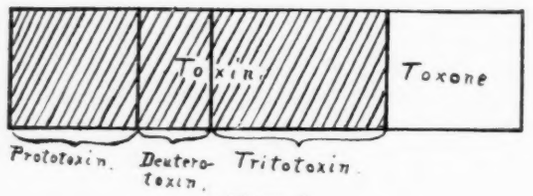

Figure 2.

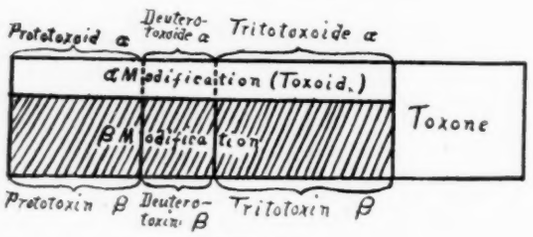

Figure 3.

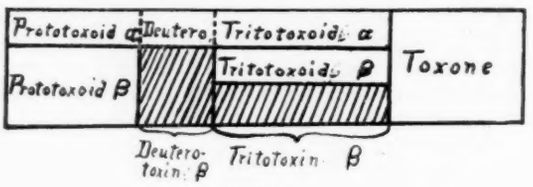

Figure 4.

Figures 1, 2, 3 and 4 are taken from Aschoff's "Ehrlich's Seitenkettentheorie, etc.," Ztschr. f. Allgem. Physiol., vol. 1, 1902. Figure 1 is a toxin spectrum worked out by Madsen. Figures 2, 3 and 4 are spectra representing the changes in qualitative and quantitative structure which a toxin may undergo with age, as described in preceding paragraphs.

Summary.

To summarize Ehrlich's views as to the nature of diphtheria toxin: The diphtheria bacillus secretes two toxins, one of which, the toxin, causes the acute phenomena of diphtheria intoxication, while the other, the toxon, causes cachexia and paralysis after a rather long period of incubation. The non-toxic toxin, or toxoid, appears as the result of the degeneration of the toxophore group of the toxin, the haptophore group remaining intact. The toxin may be separated into three divisions, which vary in their affinity for antitoxin—prototoxin, deuterotoxin and tritotoxin. On the same basis there are three toxoids—protoxoid, syntoxoid and epitoxoid (the toxon)—the first having the greatest affinity for antitoxin, while the epitoxoid has the least. The toxins are divided into an alpha and a beta portion, depending on the ease with which they are changed into toxoids. All of these substances unite with tissue cells and with antitoxin through the agency of a haptophore group, while the toxicity depends on the presence of a toxophore group in the toxin or toxon molecule.

This very complicated method of investigation was also undertaken by Madsen in the study of tetanus toxin, for which a somewhat similar toxin "spectrum" was constructed.

Such spectra have not been worked out in detail for some of the vegetable toxins, as ricin and abrin, but it is known that they form toxoids.

Snake venom apparently differs from the bacterial toxins in structure; this will be a subject for later consideration.

The Formation of Antitoxin.

The idea was originaly advanced that antitoxin was transformed toxin, a change in the latter having been effected through some action of the tissues. In that case, the amount of antitoxin produced should be exactly equivalent to the amount of toxin injected. This, however, was found not to be the case. It has been stated that a single injection of tetanus toxin in selected cases may yield 100,000 times more antitoxin than is necessary to neutralize the toxin injected. Another interesting experiment is on record which also shows the fallacy of the view just mentioned. An animal whose serum contained a high value of antitoxin was bled repeatedly until an amount of blood was drawn which equaled the total quantity normally present in the animal's body. Yet the amount of antitoxin in the new formed blood was practically equal to that which was present before the experiment.

Metchnikoff, to explain this "overproduction" of antitoxin, has suggested that the toxin molecules may be taken up by phagocytic cells and broken up into an indefinite number of smaller molecules, each of which then is altered in some obscure manner so as to constitute an antitoxin molecule.

Ehrlich "Side-Chain" Theory.

The views of Ehrlich have found wide acceptance, and have provided a valuable working hypothesis for many investigations. A consideration of this subject introduces one at once to the now famous side-chain theory of immunity of Ehrlich. It may be considered briefly at this point, insofar as it involves the origin and nature of antitoxin. Ehrlich considers it fundamental, in regard to the metabolic activity of cells, to assume that the cell constituents must enter into chemical combination with food substances in order that the latter may be made available for the use of the cell. Substances which thus unite with a cell are affected variously by the activities of the cell; some are split up into simpler substances perhaps by a ferment-like activity, the products being used for the upbuilding of the cell, or in some instances excreted for the use of other cells. Accordingly, it seemed convenient to assume that cells contain certain atom groups of unknown chemical nature which make possible the binding of food substances. The name of receptor was given to such groups, since substances are received into the cell through them. Inasmuch as the foods, and some other substances, which penetrate the cells differ in their chemical nature, it is probable that there are various receptors for the various types of substances. The binding, however, is but a preliminary step to profound changes which the substance may next undergo, through the action of other, more vital, cell constituents. That is to say, the receptor is but a link to bring the substance into relationship with the vital activities of the cell, which Ehrlich supposes may reside in a hypothetical "*Leistungskern*" (action center or nucleus). In view of this conception one readily sees the consistency of considering the receptor as a side-chain of the "*Leistungskern*," just as the chemist speaks of the various groups which may be attached to the benzol ring, or benzol nucleus, as side-chains.

Receptors.

Multiplicity of Receptors.

Side-chains.

In preceding pages it has been emphasized that a toxin, in

order that it may injure a cell, must enter into chemical combination with its constituents, and it is a fundamental tenet of the Ehrlich theory that this union is one which takes place between the toxin and the cell receptor (side-chain). So far as known, a toxin can unite with some other substance only through the medium of its haptophorous group (as in the toxin-antitoxin reaction). This presupposes the presence of a corresponding haptophorous group on the part of the cell receptor with which the toxin unites.

Action of Toxins.

Haptophore.

As the physiologic demands are probably responsible for the character of the various receptors, it is not likely that special receptors are created when some unusual substance, as a bacterial toxin, is introduced into the body. Consequently, when a toxin unites with a cell, it probably occupies receptors which, under normal circumstances, are employed in some physiologic process.

If some inert, non-toxic substance should combine extensively with cells, a corresponding number of receptors, which ordinarily are used for normal metabolism, would be thrown out of function. This would constitute an injury, not only to the cells primarily involved, but perhaps to other cells which

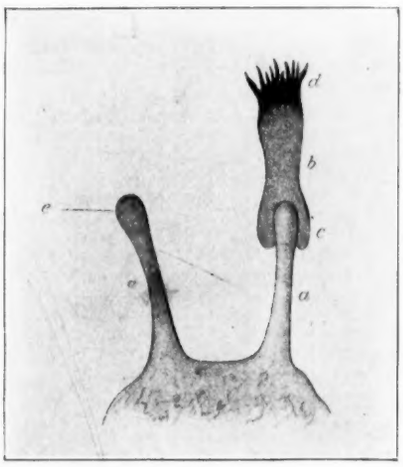

Fig. 5.—Graphic representation of receptors of the first order and of toxin uniting with the cell receptor. *a*, Cell receptor; *b*, toxin molecule; *c*, haptophore of toxin molecule; *d*, toxophore of toxin molecule; *e*, haptophore of the cell receptor. From Ehrlich's "Schlussbetrachtungen," Nothnagel's System of Medicine, vol. viii. This cut is not to be taken as representing the actual morphology of toxins or cell receptors. Nothing is known of their morphology, if, indeed, they have any. The cut is intended merely to represent, in a graphic manner, the supposed chemical structure and mode of action of these substances. This statement applies also to Figures 6 and 7.

depend on some metabolic products of the injured cells. It is possible that the action of toxoids is of this mild nature.

When toxin unites with cells there is involved not only the diversion of cell receptors from their customary functions, but in addition the destructive action of the toxin on the vital parts of the cell (perhaps on the "*Leistungskern*"). The more toxin introduced, the greater the number of cell receptors bound, and the greater the injury to the cell.

In case a non-fatal amount of toxin has been bound, but sufficient to cause some injury, how does the cell respond to the injury? Weigert, a few years ago, gave expression to a hypothesis which is held to have some bearing on the subject under consideration. In studying regeneration following injury he concluded that tissues have the tendency to reproduce not only to the extent of making good the injury, but that an excess of new tissue resulted. The clearest example of this occurrence is that of scar formation, in which a seeming excess of new connective tissue cells appears, many of which disappear later. Similarly, when a non-fatal amount of toxin unites with the receptors, a cell defect or injury is

Hypothesis of Weigert.

created. The cell has for practical purposes lost so many receptors. This loss affects the vital activities of the cell, the "*Leistungskern*," and new receptors, identical with those occupied, are reproduced. Following the law stated they are reproduced in excess of the number injured, and the excess may be so great that the cell may be overfilled with them—so overfilled that many are cast off and reach the general circulation. These cast-off receptors, or side-chains, still retaining their power of uniting with toxin, constitute our antitoxin. As Behring has stated it, the receptor, when attached to the cell, is the agent through which the latter is attacked, but when cast off from the cell becomes its protector (Fig. 5).

Overproduction of Side-chains.

As regards the structure of the antitoxin (cast off receptor), it is necessary to assume only the presence of the proper haptophorous group. Ehrlich designates all receptors of this simple type as "receptors of the first order." In following sections we shall have to do with receptors of the second and third order.

The following is a list of the most important antitoxins which have been prepared (Wassermann):

ANTITOXINS FOR BACTERIAL TOXINS.

Diphtheria antitoxin.
Tetanus antitoxin.
Botulism antitoxin.
Pyocyaneus antitoxin.
Symptomatic anthrax antitoxin.
Antileucocidin, an antitoxin for the leucocytic poison of the staphylococcus.
Antitoxins for the blood dissolving toxins of a number of bacteria.

ANTITOXINS FOR ANIMAL TOXINS.

Antivenin, for snake poison.
Antitoxin for scorpion poison.
Antitoxin for spider poison.
Antitoxins for certain poisons of fish, eel serum, salamander, turtle, and for wasp poison.

ANTITOXINS FOR PLANT TOXINS.

Antiricin, for a red blood corpuscle poison of the castor oil bean.
Antiabrin, for a similar poison of the jequirity bean.
Antirobin, for robin, a locust tree poison.
Anticrotin, for crotin, a toxin from the bean of *Croton tiglium*, the croton oil bean.
Hay fever antitoxin, for the toxin of pollens which cause hay fever.

ANTIFERMENTS.

Antirennet.
Antipepsin.
Antitrypsin.
Antifibrinferment.
Antiurease, for urease, a urea splitting ferment.
Antilaccase.
Antityrosinase.
Antisteapsin.
Antiferments against the ferments of bacterial cultures.

The above are true antitoxins. There are other substances, however, which occasionally exert an antagonistic action on toxins, although they probably are not true antitoxins. For example, it has been found that cholesterin neutralizes the action of tetanolysin, the hemolytic toxin of the tetanus bacillus.

The discovery of Hektoen that certain salts are able to neutralize the toxic action of some serums, by combining with the so-called complement, may also be mentioned in this connection.

(*To be continued.*)

Cinnamon.—Cinnamon is considered by the *Critic and Guide* a much neglected remedy. The oils of cinnamon, of cloves and of peppermint are efficient though mild antiseptics.

Clinical Reports

LEUKEMIA.

THE ULTIMATE FAILURE OF THE ROENTGEN RAYS AS A THERAPEUTIC AGENT.

EVERETT J. BROWN, M.D.

AND

CECIL M. JACK, PH.B., M.D.

DECATUR, ILL.

In THE JOURNAL, March 26, 1904, we gave a preliminary report of a case of splenomedullary leukemia symptomatically cured by the Roentgen rays. Since then we have given a more detailed account of the same case,[1] and now as it has come to autopsy we make a final report. Especial attention will be given to the postmortem findings, in the hope that some light may be thrown on the *modus operandi* and the value of the *x*-rays in this class of cases. No attempt will be made to review the literature, as this has been done so completely by Dr. George Dock[2] quite recently.

We repeat the history of the case, as given in the other reports, together with the later developments:

Patient.—W. E., male, American, aged 30, a cigar maker, unmarried, was first examined July 1, 1903. His family history is negative, except that one sister has had tuberculosis.

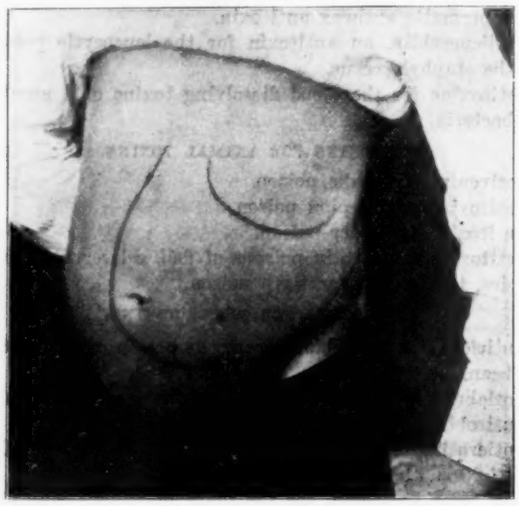

Fig. 1.—Splenomyelogenous leukemia. Photograph showing size of spleen before treatment and after four months' treatment.

History.—The patient has lived in Decatur all his life; his habits have been good; he does not use alcohol, but he is a moderate smoker. He has had the usual diseases of childhood, with good recovery in all. No history of malaria or syphilis.

Present Trouble.—The patient came to the office complaining of weakness, pain in the back and a feeling of weight and distress in the left side. Two years ago he had a fall, alighting on the lower ribs of the left side, which compelled him to stop work for two days. He has had a slight cough for some time. For six months he has been troubled with palpitation, dyspnea and slight headaches. Lately he has noticed that his shoes fit tighter at night. He becomes very weak on exertion.

Examination.—The patient is moderately well nourished, but has a somewhat cachectic appearance. His present weight is 169 pounds, which is his average summer weight; his expression is depressed; mind clear; frame medium sized; musculature soft; panniculus thin. He is slightly anemic. The visible mucous membranes are of fair color; tongue is moist. There is slight edema of ankles and legs. The lymphatic glands are not enlarged, but the inguinal glands are easily palpated. The thorax is of good size and symmetrical; expansion fair. On percussion one finds good resonance; the lower lung boundaries are normal and descend well; heart sounds are normal; the liver dullness extends to the edge of the ribs, and its thin edge is easily felt. Splenic dullness begins on the seventh rib in the midaxillary line and extends two fingers' breadth below the umbilicus in the left mammary line. To the right it extends one finger's breadth beyond the median line. On palpation the spleen is a hard, smooth, thick mass. No notch can be felt. The radial pulse is easily compressed and is moderately full and regular, with a rate of about 90. Temperature is 99.

Examination of Fluids.—The urine gives a slight precipitate with heat and acid, and a few hyaline casts are found in the sediment. The blood examination is as follows: Red blood corpuscles, 2,600,000; leucocytes, 800,000; hemoglobin, 65 per cent.; specific gravity, 1,050. On staining with Ehrlich's triple and Jenner's stains the reds show a slight paleness, slight poikilocytosis and many nucleated forms. The differential count of the leucocytes gives: Polymorphonuclear, 40 per cent.; myelocytes, 40 per cent.; eosinophiles, 8 per cent.; large mononuclear with basophilic granules, 8 per cent.; degenerates, 4 per cent.

TABLE I.

DATE.	Red Cells.	White Cells.	Hemoglobin, per cent.	Nucleated Red per 100 Whites.	Small Lymphocytes.	Large Lymphocytes.	Polynuclear Neutrophiles.	Polynuclear Eosinophiles.	Myelocytes.	Myelocytes, Eosinophile.	Large Mononuclear and Transitional.	Basophiles.	Degenerates.
July 1, 1903	2,600,000	800,000	60	2	0	0	40	4	40	2	0	8	6
August 9, 1903	2,790,000	160,000	65	10	5	0	44	5	21	25	14	6	4
September 6, 1903	3,170,000	58,000	70	9	4	0	59	3	22	2	8	..	2
October 4, 1903	3,940,000	160,000	80	2	2	0	54	2	24	1	4	..	3
November 9, 1903	4,124,000	129,000	85	0	1	0	60	2	25	3	1	5	3
December 6, 1903	4,360,000	44,360	85	0	2	0	74	0	20	1	..	..	3
January 3, 1904	4,563,0 0	23,000	90	0	4	0	83	0.5	8	0	2	2	0.5
February 7, 1904	4,700,000	11,500	90	0	10	0	75	3	3	0	3	1	5
March 6, 1904	4,840,000	8,146	95	0	11	1	85	0.5	0	0	1	0	2
April 2, 1904	5,100,000	7,130	100	0	12	2.5	81	1.5	0	0	2	0	1
May 1, 1904	5,700,000	8 921	100	0	10	2	82	1	0	0	2	2	1
July 1, 1904	5,250,000	11.204	....	..	4	4	80	....	7	0	5	..	0
September 4, 1904	5,120,000	53,480	100	2	4	5	64	2	19	0	4	..	2
October 2, 1904	2.580,000	78.940	60	7	2	1	65	....	23	1	3	..	6
November 14, 1904	3,510,000	5,601	70	7	5	4	76	....	2	0	7	..	6

Clinical Diagnosis.—Splenomyelogenous leukemia.

Treatment.—The patient was informed of his condition and advised to stop work. We gave arsenic and iron internally and *x*-ray treatments to the splenic region twice a week.

Course of the Disease.—After one month the patient seems improved; he feels stronger, and his appetite is better. On examination the spleen is apparently smaller, the right edge extending only to the sternum and the lower edge on a line with the navel. The ankles are still swollen, but the blood shows a marked decrease in the number of leucocytes, with a slight increase in the red blood corpuscles and in the amount of hemoglobin. Blood smears show an apparent increase in the transitional forms with decrease of myelocytes. The normoblasts are markedly increased. The urine still contains a trace of albumin.

September 1: The patient has returned to work. His general condition is improved; appetite good, with a gain in weight. The spleen has decreased in size and a notch is felt for the first time. Edema of ankles is less. Blood: Leucocytes decreased to 58,000, with an increase in the red blood corpuscles to over 3,000,000.

1. Medicine, July, 1904; also Ill. Med. Jour., September, 1904.
2. Amer. Med., Dec. 24, 1904.

Encouraged by the results of treatment, which had varied very little in the last two months, and by Senn's article which appeared at this time, it was decided to discontinue the iron and arsenic and to increase the frequency and distribution of the *x*-ray exposures. These treatments were now given daily to the splenic region, the ends of the long bones and to the sternum. In place of the iron and arsenic, one-grain capsules of quinin, three times a day, were given as a placebo.

October 1: The patient has not missed a day's work in the last month. The blood shows an increase in the number of leucocytes; the number of red blood corpuscles and the amount of hemoglobin, however, still show an increase. The spleen can be pushed to the edge of the ribs. An *x*-ray dermatitis of the splenic region has appeared once or twice, the outer layers of the skin desquamating, but by discontinuing treatment for a few days and using a dusting powder, no bad results have followed. The skin over the exposed surfaces was rough at first, but after exfoliation has become smooth again. The hair and pigment have disappeared from the parts exposed.

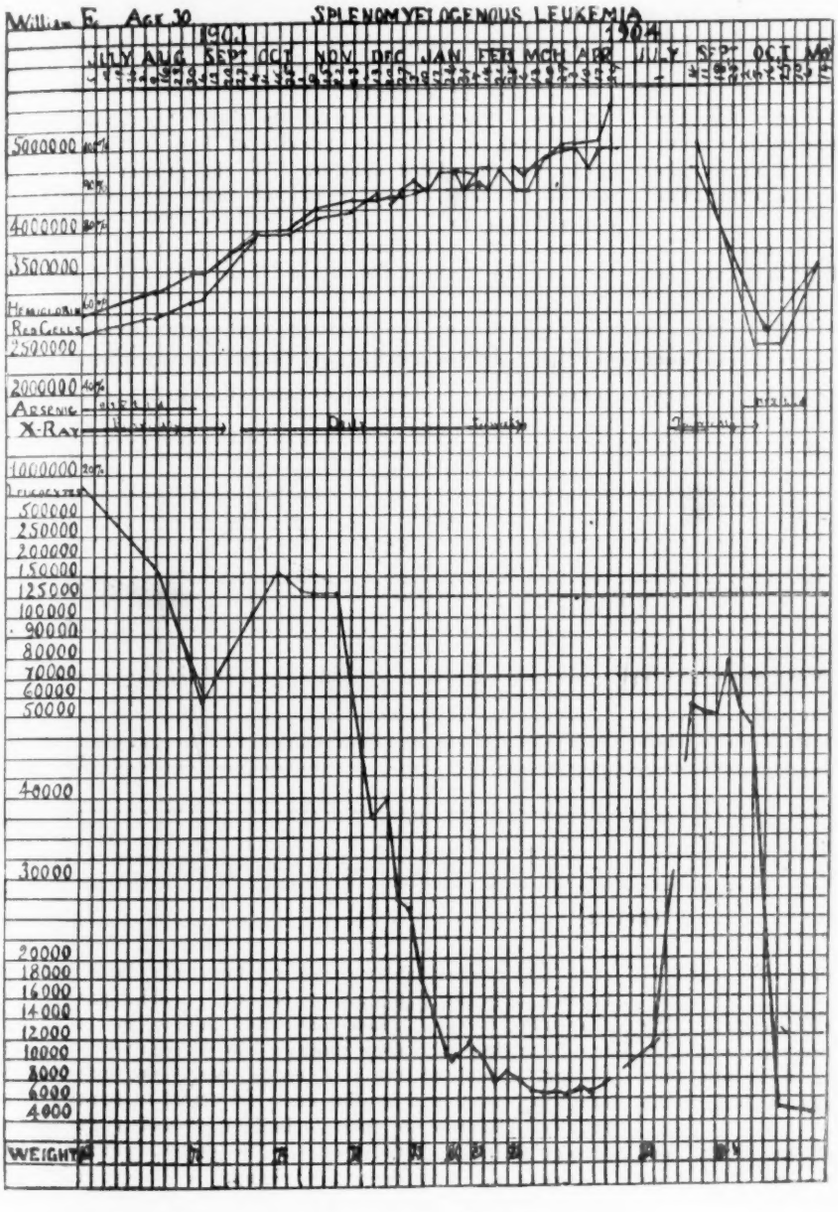

Chart 1.

November 9: Blood: Leucocytes, 129,000; red blood corpuscles, 4,124,000; hemoglobin, 85 per cent. Very little variation in size and shape of the red blood corpuscles and no nucleated forms were found. Myelocytes, 25 per cent.; polymorphonuclear, 60 per cent.; eosinophiles, 5 per cent.; small lymphocytes, 1 per cent.; degenerates, 3 per cent.

Blood examinations were now being made weekly, and charts were made showing the results of these examinations, with dates when made (Chart 1).

In February, after seven months' treatment, the albumin had all disappeared from the urine and the patient weighed 182 pounds, which is more than he had ever weighed before. The spleen could only be felt on deep palpation. Treatments were reduced to every other day, and the patient was advised to take long walks on the intervening days.

April 16: There is very slight edema of the legs. General appearance is excellent; color good; pulse full and compressible, with rate of 70.

May 1: The appearance of the patient at present is that of robust health. His complexion is florid, quite a contrast to the cachectic appearance of ten months ago. He is working daily and rides his bicycle back and forth from work. The liver is of normal size, and the spleen is not palpable even on deepest inspiration. The ankles show no edema. His weight is 184 pounds. The abdominal parietes are relaxed, but there is no ascites. The previous inguinal adenitis has entirely disappeared.

July 1: Patient returns for blood examination. Is working every day and feels fairly well. A leucocytosis of over 11,000 is found, 7 per cent. of which are myelocytes.

September 4: Patient did not return in August, but returns to-day complaining of weakness and pains in the back. He weighs 182 pounds, which is a loss of two pounds. The spleen is apparently somewhat larger, but firm. The blood shows a leucocytosis of over 50,000. Urine clear; specific gravity, 1,022; no albumin, but a few hyaline casts. *X*-ray treatment given.

X-ray treatments were continued for seven weeks, but the patient gradually became weaker, and on October 7 he was found to have a temperature of 102, so he was sent home to bed. His symptoms were those of a severe intoxication not unlike typhoid. The spleen had become much larger. On October 10 a marked diazo-reaction was present in his urine. Widal test was negative. He had now become delirious. On October 16 his fever began to decline. The blood showed a marked decrease in both hemoglobin and the number of red cells, and still a high leucocyte count. Within one week the leucocytes dropped to normal and the spleen became much smaller. A severe diarrhea developed: some blood and much mucus was passed in the stools. On October 28 urinalysis showed a clear urine; specific gravity, 1,018; acid; diazo-reaction present; albumin, 2.5 per cent.; hyaline and granular casts numerous and a moderate amount of calcium oxalate crystals. The low typhoid state continued for two weeks longer, the condition being a semi-delirium, with great emaciation, no apparent suffering, no edema; death occurred on November 15, just sixteen months after first coming under our observation.

AUTOPSY.

Seventeen hours postmortem.

The subject is a man of average size. Skin pale and sallow; muscles small and emaciated; panniculus almost absent. Both pleura free and no fluid in pleural cavities. The heart is of normal weight, its endocardium slightly thickened; muscle is firm and of a brownish-red color. The auricles contain antemortem clots and the ventricles fluid blood. The valves are normal. The lungs show marked anthracosis and yield slight exudate on pressure. There are no airless areas, but a slight hypostasis over lower lobes. The bronchi are empty and the mucosa pale. The spleen weighs 1,133 gms. and measures 15x9x6 cm. There is one notch. The capsule is greatly thickened and cuts with resistance. The cut surface is firm and dark bluish-red in color. The stroma is greatly increased, but the malpighian corpuscles are not visible.

The liver is enlarged but firm. The left lobe is atrophic. The veins of the capsule are congested, the capsule being thickened. On section the organ is fairly rich in blood. The cut surface is granular, brownish-red in color, and the outline of the lobules is distinct.

The fibrous capsule of the kidneys strips off easily. The surface is slightly pale. On section the labyrinth and the medullary rays are distinctly outlined. Connective tissue is increased.

The stomach is in normal position. Walls are pale. The small intestine shows no ulcers. The mucosa is pale. No enlarged glands in the mesentery. The rectal walls are much thickened and the mucosa is pale. The retroperitoneal glands are not enlarged.

Pathologic Report.—The following pathologic report was kindly made for us by Dr. A. S. Warthin of Ann Arbor, who is now doing much experimental work in this line:

Lung: There is moderate chronic passive congestion; there is some atrophy, and the smaller bronchi are somewhat dilated. The number of leucocytes in the blood vessels is not perceptibly increased. Lung does not show the characteristics of lung from case of leukemia.

Spleen: Marked fibrosis. There is a fibroid hyperplasia of the reticulum of the pulp closely resembling that of splenic anemia. There is marked chronic passive congestion, the venous side being greatly dilated and filled with blood. Follicles are not preserved. The cells of the pulp are chiefly of a fibrous-connective-tissue type or endothelial. Lymphocytes are relatively very few. Cells of the type of large lymphocytes are more numerous. There are numerous large atypical cells of the endothelial type. There are few eosinophiles, and no myeloid changes. Leucocytes are relatively few in the blood vessels. The general picture resembles that of a spleen of splenic anemia and not that of a leukemic case.

Liver: There is atrophy, chronic passive congestion, and some parenchymatous degeneration. Connective tissue is relatively and in some areas absolutely increased. There is no leukemic infiltration. Glisson's capsule is somewhat more cellular than normal, but the cells are chiefly of a connective-tissue type. Leucocytes are not increased in vessels.

Pancreas: Postmortem change. There is some atrophy with slight fatty infiltration. There is no leucocyte infiltration. Leucocytes are not increased in vessels.

Small Intestine: There is slight atrophy and there are a few lymphoid elements. There is no evidence of leukemia.

Large Intestine: Small chronic ulcers are present. There is no evidence of leukemia.

Kidney: Sections of the kidney show remarkable lesions in the form of extensive deposits of lime salts, involving chiefly the convoluted tubules. For the greater part these tubules are replaced by masses of lime salts, either completely filling up the tubule and replacing the epithelium or confined to the epithelium alone, either partly or wholly surrounding the lumen of the tubule. Some glomeruli show small deposits, and casts of lime salts are found also in the straight tubules. The deposit is, however, for the chief part, in the convoluted tubules. Such convoluted tubules as are in part free from lime salts show more or less parenchymatous degeneration. Localized areas of acute interstitial inflammation are also present and hyaline casts are found in some straight tubules. There is no leukemic infiltration and no increase of leucocytes in the blood vessels. The general picture closely resembles the parenchymatous changes with deposit of lime salts seen after poisoning with mercuric chlorid.

Lymph Glands: The small lymph glands show a lymphoid hyperplasia resembling that of lymphatic leukemia or of some of the cases reported as lymphosarcoma (aleukemic leucoblastoma?). The distinction between cortical and medullary portions is lost, the sinuses are filled with or obliterated by lymphoid cells, and the gland presents an almost uniform lymphoid structure. No germinal centers are found. The capsule in many places is infiltrated, and such infiltration extends also beyond the capsule into the surrounding fat tissue. There are no myeloid changes. Numerous large lymphocytes are present throughout the gland. There are a few eosinophiles. Leucocytes in surrounding vessels are not increased.

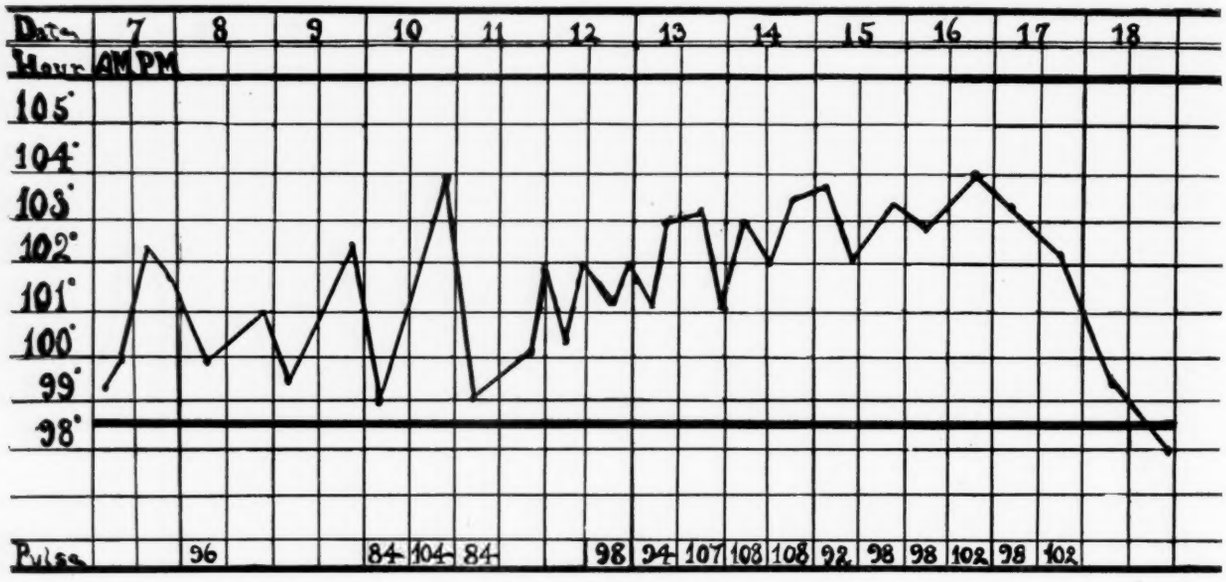

Chart 2.

Summary.—The only pathologic finding suggestive of leukemic disease is the condition of the lymph glands. This resembles the gland picture seen in some cases of lymphosarcoma (aleukemic leucoblastoma?) or that of a lymphatic leukemia minus the increase of mononuclear elements in the blood. The spleen picture is of the same type as that of the splenic fibrosis of splenic anemia. Counts made of the leucocytes in the vessels of all the sections show an unusually high percentage of mononuclears. Because of the fixation, these cells could not be satisfactorily studied. There is, however, nowhere any increase of leucocytes in the vessels suggesting the existence of a leukemia.

The calcification existing in the kidney is remarkable for its extent. It would suggest the occurrence of an intoxication causing degeneration or necrosis of the epithelium of the convoluted tubules followed by deposit of lime salts, such as occurs in poisoning with mercuric chlorid, chromates, etc.

Remarks.—The postmortem findings in this case are very interesting in connection with the experimental work that has been done by H. Heinecke,[3] and also the work now being done by Warthin which he will soon publish. Heinecke found that a brief exposure of mice, rabbits and dogs to the rays induces a distinct destructive process in the lymph follicles. With an exposure too brief to induce changes in the skin, he could cause a distinct destruction of the nuclei of the leucocytes in the follicles of the spleen, leading to their almost complete disappearance. Analogous processes took place in other lymphoid elements. His remarks on the changes in the bone marrow are not clear except that some destruction of lymphoid elements took place. These experiments might suggest a physiologic basis for the use of the *x*-ray in leukemia, so far as the excess of white cells in the circulating blood and the presence of abnormal cell elements are concerned, and they compare most favorably with the results in our case. Undoubtedly the *x*-ray has a selective action, apparently affecting tissue undergoing pathologic hyperactivity and causing degeneration and necrosis of such tissue; however, the damage done is apparently greater than the good.

Dr. Warthin, in summing up the pathologic findings, says: "If any conclusion is warranted from the study of the specimens, it would seem to be that the *x*-ray treatment has resolved the leukemic condition into an aleukemic state, but that the essential disease process, as evidenced by the condition of the lymph glands, is still active. The leucocytes have been removed from the general circulation and from the areas of infiltration, the spleen presenting the characteristics of a chronic fibrosis. The part played by the latter would appear to be secondary. The remarkable condition of the kidneys offers room for some speculation as to the source of a toxin. Such might result from the destruction of enormous numbers of leucocytes."

It is much to be regretted that no specimen of bone marrow was obtained, for, as we believe this disease to be primarily in the bone marrow, we can come to no real conclusion until this part of the subject has been thoroughly studied.

It is to be hoped that the stimulation this form of treatment has given workers may at least lead to some conclusion as to the cause of this most interesting disease.

3. Münchener med. Wochenft., May 3, 1904.

A CASE OF MACROCHEILIA

DUE TO ENLARGEMENT OF THE MUCOUS GLANDS OF THE LIP.

IRVIN LINDENBERGER, M.D.

FRENCH LICK, IND.

This condition may be due to one or several causes. With the exception of inflammatory affections, neoplastic growths occupy a prominent position. With inflammatory thickening there exists an enlargement not only of the glands but of the tissues of the whole lip, and affecting one or both lips; there is no increase in the number of glands affected. Congenital dilatation of the lymphatic vessels, which is, more strictly speaking, an overgrowth when occurring in the tongue, produces macroglossia; when occurring in the lip, labium and other subcutaneous parts it is known as macrocheilia. Acquired lymphangiectasis is most commonly observed in the lower extremities and in the external genitals, being due to an obstruction of some nature and characterized by hyperplasia of the skin and subcutaneous tissues, producing the condition known as elephantiasis. Fraenkel[1] states that prior to a case reported by him, macrocheilia due to a neoplasm of the mucous glands of the lips was unknown. This case was more fully reported by Dr. Daniel N. Eisendrath of Chicago,[2] with a case of his own.

From the photograph of the present case, it will be noticed that the enlargement is only of the upper lip. This enlarge

ment was especially noticeable in talking and laughing. On palpation, the lip was found to be soft and smooth, but on pressure there was a slight "shotty" feel in one or two glands on each side of the median furrow. The condition dated from a blow in the mouth, received about fifteen years previously. There has been no appreciable enlargement in the past ten years. His general health has always been good; there is no history of any specific trouble. A wedge-shaped incision disclosed a number of small glands, slightly smaller than buckshot, on each side. They were removed and the mucous membrane was sutured. Healing was prompt and the cosmetic effect was good.

1. Arch. für klinische Chirurgie, vor. xliv, 1892.
2. Annals of Surgery, September, 1904.

Lowering of the Arterial Pressure Reliable Danger Sign in Chloroform Anesthesia.—J. Tissot of Paris has been studying on dogs the relations between the modifications in the arterial pressure and the toxic action of chloroform on the heart. The arterial pressure is a reliable index of the contracting power of the heart. We know that fatal accidents from chloroform are due to the toxic action of the drug on the heart or on the nerve centers controlling its action. He found that the dogs never displayed any threatening symptoms as long as the arterial pressure was above 100 mm. Hg, but respiratory arrest occurred whenever the pressure dropped to 60 mm. Cardiac syncope occurred if it fell near or below 50 mm. Hg. The chloroformization in his experiments was always slow and gradual. Tissot believes that these data will be found to apply also to man, and that by watching the arterial pressure we will be able to detect impending danger long before it is revealed by any other sign. Tissot's communication was presented at the meeting of the Paris Académie des Sciences, February 20, 1905.

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EPIDEMIC CEREBROSPINAL MENINGITIS.

Just as there are numerous forms of arthritis due to different etiologic factors, but one in particular due to a specific micro-organism and characterized by a definite symptomatology, namely, acute rheumatic polyarthritis, so also among the several varieties of meningitis of diverse origin there stands out one different from all the rest and dependent on its own specific bacterial cause, namely, epidemic cerebrospinal meningitis. While no doubt cases of the latter disease had been recognized previously, its epidemic occurrence was first noted at Geneva in 1805. A year later the occurrence of an epidemic at Medfield, Mass., was described independently, and a most complete report on the subject was made to the Massachusetts Medical Society in 1809 by a committee appointed for the purpose. In 1811 a classical study of the disease was published by Elisha North of Goshen, Conn., and an admirable account of its history and its relation to other epidemics was given by Dr. S. G. Weber in the Boylston Prize Essay for 1866. A thoroughly modern and scientific report on the subject was made to the Massachusetts State Board of Health in 1898 by Councilman, Mallory, and Wright, bearing on the epidemic in that state during the winter and spring of 1896-1897.

The following anatomic peculiarities were early noted in cases of epidemic cerebrospinal meningitis as compared with other varieties of meningitis, namely, the character of the exudate, the greater degree of involvement of the spinal membranes, extension of the inflammatory process to the brain and spinal cord and along the nerves, together with a general absence of inflammatory lesions in the intima of the blood vessels. It was not, however, until the dawn of the bacteriologic era that it became possible to establish the absolute identity and distinctiveness of epidemic cerebrospinal meningitis. Leichtenstern, in 1885, found cocci, singly and in groups, arranged like gonococci in leucocytes in the meningeal exudate. Weichselbaum, in 1886, observed a diplococcus resembling the gonococcus, in small numbers, in cases of acute cerebrospinal meningitis, and occurring almost solely within the cells. The organism grew best on agar-agar, but it did not thrive at room temperature. It was not, however, readily demonstrable in sections of the meninges, in which and in cultures it was decolored by Gram's method. It proved pathogenic for lower animals, and was given the name of *Diplococcus intracellularis meningitidis*. These observations were subsequently confirmed by numerous other investigators, while in 1896 Heubner discovered the organism in fluid obtained by lumbar puncture from cases of epidemic cerebrospinal meningitis. Schwabach, in 1891, described diplococci in pus cells from a case of otitis media secondary to meningitis. Kischensky, in 1895, found the same micro-organisms in hemorrhagic foci in the lungs, and Scherer, in the same year, found them in the nasal secretion. The specificity of the disease has thus been established.

Epidemic cerebrospinal meningitis occurs most commonly in late winter and spring, and especially in young adults and children. It has often been observed earliest among troops in a community. The disease does not always occur in epidemic form and the extension is not continuous. Isolated epidemics are the rule and sporadic cases are not uncommon. Like other infectious diseases, epidemic cerebrospinal meningitis is essentially transmissible. The channel of communication has not been demonstrated, but the atmosphere is most probably the medium of conveyance. On account of the concealed and inaccessible localization of the morbid process the danger from this source is probably comparatively slight. Nevertheless, a limited number of cases have been placed on record in which more than one member of a family or household has been attacked by the disease. Osler, in the Cavendish Lecture for 1899, stated that he knew of no case in recent American experience in which a physician or nurse had been attacked or in which cases had developed among other patients in a hospital, but an unfortunate exception to this is afforded in the death at Philadelphia recently of Dr. A. B. Craig, who acquired the disease from attendance on a patient suffering from cerebrospinal meningitis. It has been suggested that an insect may play the part of intermediate host, but evidence in support of such an hypothesis is as yet wanting.

The disease usually sets in suddenly, with severe headache and pains in the neck and the back, to which muscular rigidity is soon added. In children there may be convulsions. At times there is a brief prodromal period attended with general malaise and terminated by a chill. The temperature rises, although the pulse does not increase proportionately in frequency; both are characterized by irregularity. Other symptoms are vomiting, delirium, derangement of consciousness, varying from drowsiness and stupor to coma, paralysis of varying degree and distribution, and various cutaneous eruptions—erythematous, miliary, herpetic, morbilloid, petechial. The course of the disease is rapid in fatal cases, the duration varying from a few hours to several days. In less acute cases recovery may be retarded for a prolonged period. After death the pia-arachnoid of both brain and spinal cord is found early in acute cases to be the seat of hyperemia and purulent infiltration, and later it is found to be covered with a fibrinopurulent exudation, while in chronic cases there is fibrous

thickening, with or without exudation. The tissues of the brain and cord themselves are also involved, and frequently, likewise, the cranial nerves, especially the second, fifth, seventh and eighth, and the roots of the spinal nerves. Pneumonia is a frequent complication. The nose and throat may be the seat of inflammation, and the sense of smell and taste may be lost. Deafness may result from purulent inflammation of the labyrinth of the ear or from involvement of the auditory nerve. The eyes often are suffused and ophthalmia has been observed. The ocular muscles, internal as well as external, may be irritated or paralyzed, so that the pupils may be contracted or dilated, and strabismus and nystagmus be present. The optic papilla may be congested or inflamed, and atrophy and blindness may result. The joints are frequently the seat of inflammation. Leucocytosis is invariably present, the polymorphonuclear leucocytes especially being increased. The number of red blood corpuscles undergoes little change. Mental impairment of varying degree is not a rare sequel.

The diagnosis of epidemic cerebrospinal meningitis is ordinarily easy, but it should always be confirmed by the demonstration of the *Diplococcus intracellularis meningitidis* in the fluid removed by lumbar puncture.

The prognosis is unfavorable, death occurring in from 20 to 70 per cent. of the cases. Even when recovery takes place serious sequels may persist.

Little is to be hoped directly from treatment. There is no specific. The future may develop an antitoxin, but even under the most favorable circumstances this is more likely to have a prophylactic than a curative value. The antitoxin of diphtheria has been employed as a remedial measure, but its use has been unattended with success. Inasmuch as the disease is transmissible, danger from this source should be minimized by isolating the patient and by disinfecting the discharges, especially from the nose, the ear and the lungs. He should be placed under the most favorable hygienic surroundings, in a large, well-ventilated quiet apartment. The intestinal tract should be cleansed by a purgative dose of calomel, followed by a saline, and the functions of the emunctories generally should be sustained. The diet should be simple, digestible and nutritious. A robust patient should be bled from a vein. Leeches applied behind the ear may relieve the headache and may exert a beneficial influence on the inflammatory process in the skull. A similarly good effect may be brought about by the application to the head and spine of cold in the form of ice in bags, or of water passed in a continuous stream through tubes. Restlessness should be allayed by narcotics, of which the best is morphin, preferably administered hypodermically. If there be a tendency to stupor, stimulants, such as camphor, musk, valerian, ether, wine, champagne or coffee, will be indicated. Lumbar puncture has been proposed and has been employed as a therapeutic procedure. While it has afforded a certain measure of symptomatic relief in some cases, permanently effective results have not yet been obtained from this measure. The same statement is applicable to trephining the skull and the spinal column, with irrigation and drainage.

From the foregoing considerations it will accordingly be seen that here, as elsewhere, the most effective as well as the most feasible treatment consists in a rational application of the essential principles of modern prophylaxis, namely, separation of the sick from the well, and disinfection of all infected matters.

THE NATIONAL INVESTIGATION OF LEPROSY.

A bill recently passed by Congress provides that when the Territory of Hawaii shall have ceded to the United States in perpetuity a tract of land one mile square within the leper settlement on the Island of Molokai, a hospital station and laboratory of the U. S. Public Health and Marine-Hospital Service shall be established thereon for the study of the methods of transmission, cause and treatment of leprosy. It further authorizes the Secretary of the Treasury to cause the erection on the site selected of suitable and necessary buildings, and that the surgeon general of the Public Health and Marine-Hospital Service, through his accredited agent, may receive patients afflicted with leprosy and committed to his care under the legal authorization of the Territory of Hawaii. These patients are not to exceed forty in number to be under treatment at any one time, and they shall remain under the jurisdiction of the surgeon general until returned to the proper health authorities of Hawaii.

The surgeon general, with the approval of the Secretary of the Treasury, is authorized also to detail, or to appoint, for the purposes of these investigations, any medical officers, acting assistant surgeons and others who may be necessary for the purpose. The sum of $100,000 is appropriated for the erection of the buildings, and $50,000 for the maintenance and pay of officers and employes for the fiscal year ending June 30, 1906.

The treatment of the disease in the past, with few exceptions, has been rudimentary, empirical and lacking in concerted effort to establish a cure. There can be no doubt that leprosy is spreading, and that more systematic work should be done to prevent the further increase of the disease as well as to care for the sufferers.

In spite of the discovery of the cause of leprosy, the *Bacillus lepræ* by Hansen and its investigation by others, there is but little more known of the methods of transmission and rational treatment of the disease than was known in Mosaic times. The act above referred to is in no sense an act to relieve the health authorities of the Territory of Hawaii of the care of the lepers of that country. It simply contemplates that the rich store of material offered by the thousand or

more lepers confined within the limits of the leper colony on the Island of Molokai should be made use of with a view to determine the methods of transmission, the cause of the spread and the treatment of leprosy. There can be little doubt that the treatment of leprosy affords a field of work full at once of promise and of arduous effort. Lepers are cured from time to time; indeed, the reports of United States consular officers in China would seem to indicate that a line of treatment instituted in that country by Raszlag promises to be of great value.

It has been reported that a line of treatment, which is successful in its results, has recently been put in operation by Dr. Isadore Dyer, and it has been announced that Dr. Rost[1] of the Indian Medical Service has succeeded by special technic in cultivating the *Bacillus leprœ*, and in preparing from his cultures a material which he designates "leprolin," and which he claims is applicable to the treatment of the disease. Treatment, however, is of comparatively little avail unless at the same time we can arrive at definite and scientific information as to the methods of the transmission of the disease, looking to its prophylaxis as well as to its cure. How the causative organism gains entrance to the economy we do not know. Why it is that the infection of the disease is not much more widely spread among the Caucasian races than it is, we can not decide. What line affords the greatest promise of success, we can not tell. All of these questions, it is hoped, will be solved by the investigations about to be made in Hawaii.

The condition of the leper of Hawaii, even under the enlightened management of the leper station at Molokai, is deplorable in the extreme. The search for lepers in the islands is active and unceasing. When a case of leprosy is discovered the person is brought before a board of leprosy experts, and it being decided that the disease is leprosy, the unfortunate is sent to the Island of Molokai, there to remain for the remainder of his natural life, virtually a prisoner, and not because a crime against society has been committed, but because he has been stricken with a disease recognized as communicable and apparently incurable.

It is sincerely to be hoped that succeeding congresses will make the necessary small appropriations for the maintenance of the experimental station, and that the far-reaching results will inspire those having the matter in charge with a degree of enthusiasm which will be the best guarantee of success. Though there are not wanting instances of the establishment of settlements and leprosaria for the segregation and care of lepers, it seems to be left for the Government of the United States to have instituted systematic, well-directed efforts looking to the cure of the disease. The undertaking is worthy of every success, and it would seem that for the first time in the history of the world there is hope for the leper.

1. Indian Med. Gaz., June, 1904, abstracted in THE JOURNAL, July 23, 1904, p. 286.

EXPERIMENTAL MEASLES.

As early as 1758, Francis Home of Edinburgh attempted the inoculation of measles. His method consisted in saturating cotton with the blood taken from the skin of a patient suffering from the disease and applying it to an abrasion in the individual to be inoculated. He reported 15 cases of inoculation, but an analysis of these cases in the light of our present knowledge makes it seem certain that he was not successful in reproducing the disease in any instance.

Since Home's work, many physicians have tried to produce measles experimentally, and among them Wachsel, Speranza, Katona, McGirr and Bufalini asserted that they were successful. Some used blood, others tears, and others nasal mucus as a source of the virus. A critical study of their methods and results show them to be of but little value, for, in the first place, the possibility of natural infection was scarcely ever excluded, and, in the second place, the evidence that the eruptive diseases which followed the inoculation were in reality measles is not at all convincing. The only experiments in the literature reported as successful which can lay any claim to credence are those of Mayer of Vienna, made during the epidemics of measles in 1845-51. His results have not been reported in great detail, but they impress us as being reliable. He states that he "vaccinated" successfully six times by using as his inoculation material scrapings from the center of a rubeolous spot. These scrapings must have included blood, epithelial débris and tissue juices, and the experiments, though undoubtedly successful as far as the production of the disease in at least two cases is concerned, do not permit any decision as to the exact localization of the virus in the infected individual, i. e., to say whether it exists in the blood alone, the skin alone, or in the tissue-juices.

The conditions of successful experimentation with measles are difficult to realize. The possibility of natural infection must be excluded. Candidates susceptible to the disease must be found and their consent to inoculation must be obtained. They must be kept isolated. The virus must be derived from a reliable source. There must be nothing equivocal about the experimenter, or in any way connected with the conditions of the experiment. The proper investigation and ideal conditions appear to have been met recently. Hektoen,[1] at the Memorial Institute for Infectious Diseases in Chicago, has brought the indisputable proof not only first of the inoculability of measles by subcutaneous injection, but, second, of the existence of the virus in the blood of patients during the early eruption; and, third, of the retention of virulence by blood introduced into ascites-broth and kept at a temperature of 37° C. for twenty-four hours. He has demonstrated that, though the exact nature of the infective agent is as yet un-

1. Hektoen, L.: Experimental Measles, *Jour. Infectious Dis.*, Chicago, 1905, vol. ii, pp. 238-255. Abstracted in THE JOURNAL, March 18, p. 909.

known, it is possible to obtain the virus of measles in a relatively pure state, at least unmixed with other microbes; this gives opportunity for the fruitful application to the infective agent of a whole series of methods of investigation hitherto not feasible.

For the details of Hektoen's experiments and an account of the careful controls made, the original article should be consulted.

TRUTH AND POETRY CONCERNING URIC ACID.

XI.

Up to the present our review has dealt chiefly with the researches bearing on the normal physiologic relations of uric acid, and we have, we believe, presented to our readers, though in very brief form, all of the important facts which may be considered as established in connection therewith. We desire now to turn to a consideration of the studies made on uric acid in disease, in other words, to the pathologic physiology of the substance. Though the discussion of this side of our topic will doubtless be even more interesting to our readers than that of the normal physiology, it is necessary to confess in the beginning that only a small number of definite facts on the pathologic side have thus far been accumulated, and that our knowledge of the significance of uric acid in pathologic processes is extremely fragmentary. In the researches on the pathology of uric acid we find investigators indulging in assumptions and theories, as a rule, rather than reporting facts—the articles on the topic teem with "poetry," and are singularly deficient in content of recognizable "truth."

Of the various conditions in which deviations from the normal uric-acid relations have been observed, two stand out prominently from the rest, inasmuch as in them it has become matter of common belief that the clinical manifestations are directly due to these deviations; we refer to gout and to the so-called uric-acid diathesis. In diseases like pneumonia and leukemia, in which, as we have seen, uric-acid formation and excretion may be increased, no one attributes the cause of the diseases or the symptoms of the patients to the altered uric-acid metabolism; it is assumed that the change in the uric-acid relations is, in them, a secondary phenomenon, a modification resulting from the primary pathologic process. Even in the uric-acid diathesis there is a good deal of evidence to indicate that we are concerned merely with altered conditions of solubility of uric acid and urates rather than with real disturbances in uric-acid formation and destruction; so that it is practically in gout alone that disturbances of actual uric-acid metabolism are held primarily responsible for abnormal clinical manifestations.

In gout, as everybody knows, two characteristic clinical phenomena are met with—the so-called gouty attacks of inflammation and the gouty deposits or tophi. The attacks of gouty inflammation are especially prone to affect the small, distal joints of the extremities, the metacarpophalangeal joint of the great toe being most frequently involved. The arthritis of gout is distinguished further from the other arthritides (1) by its frequent relation to excessive eating or drinking, (2) by its tendency to come on suddenly in the night, and (3) by the marked participation in the inflammatory process of the soft parts surrounding the joint. The gouty deposits or tophi, on the other hand, occur usually without any accompanying acute inflammatory reaction in their neighborhood. No matter, then, to what theory of gout we incline, we must see to it that our theory accounts for the origin of the acute gouty attacks of inflammation, that it explains how the tophi arise, and that it gives us some clue to the sites of predilection, both of the inflammations and of the gouty deposits.

Even before the end of the eighteenth century, shortly after the discovery of uric acid itself, Wollaston demonstrated the uratic nature of gouty deposits, and gave expression to the view that uric acid, in some way or another, stands in definite relation to the pathologic physiology of gout. Though Wollaston's idea received support from Forbes and later from Cruveilhier, it was strongly opposed by Scudamore, an authority whose opinion had great weight with his contemporaries. Accordingly, we find in the early part of the nineteenth century a whole series of hypotheses developed to explain the essential nature of gout, independently of the relation of uric acid to it. Some attributed the disease to alterations in the vascular system, others to intestinal disturbances, still others regarded it as of neural origin, and finally, there were those who believed it to be due to a toxemia, to the existence of some *materia morbi* circulating in the blood.

Scudamore himself asserted that gout is due to weakness of the blood vessels in the portal system, and that as a result there is abnormal secretion of the bile, and, indeed, a general disturbance of secretion throughout the intestinal canal. Gairdner held that the gouty pains are due to the rupture or extreme dilatation of capillaries around the fine nerve fibers as a result of venous congestion. Parry maintained that the essential pathology of gout consists in an uneven distribution of the blood, and that the gouty paroxysm is to be viewed simply as an effort to restore the normal equilibrium. Of those who favored an intestinal origin, Sutton and Todd, both English physicians, may be mentioned. Todd's idea was that in gout, through some pathologic activity of the duodenum, there is increased formation of lactic acid, and further, that, owing to hepatic disturbances, biliary constituents are retained in the blood. Cullen was the especial champion of the theory of a nervous origin of gout; the affection of the nervous system leads, he thought, to a depression of tonus. That gout is due to some sort of toxemia was the view advanced by Henry Holland, though he did not speculate as to the exact nature of the noxa concerned.

Note how gratuitous were most of the assumptions

in these older theories of gout! For the most part, they were mere creations of the imagination, unsubstantial fumes of fancy, effects of the indulgence of revery. Such stretches of the imagination, uncontrolled by actual observation and scientific experiment, have never brought us far in medicine, and never can bring us far. Instead, nature must be interrogated and she must be compelled to answer the questions herself. If we are to get accurate ideas regarding what goes on inside a gouty patient, we must draw the information in some way out of the patient himself, and take it into our minds through the medium of our organs of sense; we may not hope to attain to any significant truth in the matter simply by the use of our so-called "mind's eye." To some of the objective studies of gout in contrast with these subjective inventions it is our intention to advert in the next installment of this review.

MORBID ALTERATIONS IN BONE MARROW.

A satisfactory explanation is yet wanting for the difference in the changes that take place in the number of leucocytes in cases of typhoid fever on the one hand and of other infectious diseases, notably pneumonia, on the other hand. In the former, when uncomplicated, the number, as is well known, is invariably diminished, while in the latter it is generally increased. It has been demonstrated that a close relationship exists between certain cells of the hemopoietic organs and the cells of the circulating blood. Various alterations in the bone marrow that appear to be absent in cases of other infectious diseases have been observed in cases of typhoid fever, and in this fact may reside, in part at least, the explanation for the phenomena under consideration.

These interesting observations have been confirmed by the results of a comparative study recently made by Dr. Warfield T. Longcope.[1] Examination of the material from 26 cases of typhoid fever disclosed the existence of certain definite and histologic lesions closely resembling the changes in the mesenteric lymph nodes, in the lymphatic follicles of the intestine and in the spleen. These alterations consisted in the presence of many lymphoid cells, large phagocytes and foci of necrosis, with more or less hyperplasia of the blood-forming cells. In the marrow from many cases in which death was due to perforation and general peritonitis there were in addition diffuse degenerative changes in the blood-forming cells, together with marked edema and congestion of the tissues. Differential counts of the bone-marrow cells from 10 cases disclosed a marked relative increase in the lymphoid cells over the granular myelocytes. The bone marrow from 15 cases of acute lobar pneumonia, 4 cases of peritonitis, 1 of acute cerebrospinal meningitis, 1 of retroperitoneal abscess and 1 of puerperal septicemia exhibited similar alterations, though differing in many important particulars from those observed in the cases of typhoid fever. There was more or less extensive hyperplasia of the blood-forming cells, with a marked relative increase in the granular myelocytes over the lymphoid cells. In the cases of peritonitis due to other causes than typhoid perforation, diffuse degenerative changes were absent. In none of the cases of this group were foci of necrosis found. Large phagocytic cells were exceedingly rare or entirely absent. The bone marrow from 4 cases of nephritis and from 1 of carcinoma of the gall bladder exhibited no distinctive pathologic alterations, and seemed to resemble closely the marrow from two normal individuals.

From the evidence which is thus afforded it seems not impossible that the lesions in the bone marrow in cases of typhoid fever are in some way related to, and perhaps responsible for, the hypoleucocytosis characteristic of the disease. It also seems probable that the lesions in the bone marrow in cases of acute lobar pneumonia, peritonitis and other infectious diseases bear a close relation to the hyperleucocytosis so commonly observed in these conditions. May it not be that the character of the cells which are proliferated plays a more important part than has generally been assigned to it? It seems reasonable to suppose that if the proliferated type of cell is one which normally emigrates into the circulation, leucocytosis should occur, while if the proliferated cell is an undifferentiated one, such as would normally remain in the bone marrow, leucocytosis should not occur. The question is one which is difficult of solution, inasmuch as we can not hope by histologic means alone to separate the rôle played by chemotaxis from that played by cell differentiation. This can only be done by experimental means, and as yet it is difficult to see how the problem can be attacked experimentally. Whatever the ultimate explanation of the phenomena may be, they themselves are apparent, and serve to explain certain clinico-pathologic facts in these two classes of infection.

1. Bulletin of the Ayer Clinical Laboratory of the Pennsylvania Hospital, No. 2, January, 1905.

IN LINE OF DUTY.

Among the deaths reported in this issue of THE JOURNAL are those of Dr. Albert B. Craig of Philadelphia and Dr. James A. Moore of New Haven, both of whom died from cerebrospinal meningitis, the disease in each case having been contracted from patients. These men died in line of duty, as do soldiers who fall in battle or who die from disease contracted in service. The soldier does not consider it heroic to do his duty, nor does the physician who succumbs while fighting disease as a part of his professional duty. The physician who shows himself a coward in the presence of the danger of infection or contagion is deserving of nothing but contempt and obloquy. The deaths of men like these bid us pause and reflect on the heritage of honor and of sacred trust that is ours as physicians.

A HINT TO THE DOUBTERS.

If we are not mistaken, the majority of medical journals, the majority of physicians, the majority of pharmacists, the majority of pharmaceutic journals, in fact the majority of all who have thought about the subject, have said that the enormous use of secret nostrums by the medical profession of our country is a most serious evil. Destructive criticisms have been made, and there has been any amount of fault-finding in regard to conditions; in fact, many excellent men have said that things could not be worse than they are at present. The movement now started to try to get rid of part of the evil and, if possible, to solve some of the problems connected with it, may be a failure, as some of our contemporaries have kindly intimated—and it may be a success. If the latter, of course everyone will appreciate that good has resulted, i. e., everyone but the nostrum manufacturer. On the other hand, if it all ends in a failure, we will be no worse off than we were before, and we will be richer by experience. Consequently, we do hope that those who are fearing this failure will not lie awake at nights worrying about it.

MEDICAL MUSEUMS IN MEDICAL TEACHING.

In the article by Dr. Abbott in this issue of THE JOURNAL,[1] it is stated that, while the laboratory methods of medical teaching are utilized in this country as much as, or more than, in any other, it is here that the remarkable fitness of the medical museum for teaching purposes is perhaps least understood. We are not affirming nor disputing this statement, the conditional "perhaps" is an essential saving clause to any such utterance in regard to the United States. We may have institutions in which the admirable system of McGill is equaled if not excelled. This, however, does not in any way lessen the advisability of calling more general attention to this method of imparting instruction. Object-teaching, in all recent times, has been recognized as one of the most important branches of any complete system of education, and, in certain ways, it is as valuable in advanced professional studies as it is in the more elementary subjects. The case method in law studies, and the hospital year which should properly finish off every medical student's education, are the fullest adaptations of this method in modern professional instruction. It is not every medical student, however, who can avail himself of the advantages of hospital practice, and, even could he do so, the plan of utilizing the medical museum, as described by Dr. Abbott, could do him nothing but good. Properly carried out, this method of instruction can not fail to strengthen the student's powers of observation and to render easier of solution many of the problems likely to be met in his future practical work. A well-arranged and complete medical museum should be an adjunct to the training given in every medical school, and its systematic utilization according to a well-devised plan should be made an essential part of the instruction of the more advanced classes. This method of teaching holds great possibilities for the betterment of the instruction in medical colleges.

1. See page 935.

THE VALUE AND LIMITATIONS OF THE X-RAY TREATMENT OF MALIGNANT GROWTHS OF EPITHELIAL ORIGIN.

The correct estimation of the value of a given therapeutic agent in a given disease is often a difficult matter, on account of the many factors which must be taken into consideration in forming a judgment. In the treatment of new growths of a malignant character, the primary question to be considered is whether the suggested agent will completely destroy the focus of disease; then, if this question be answered in the affirmative, whether or not the destruction is as rapid and as free from risk as agencies already existing. In certain types of malignant neoplasm, early removal and freedom from risk may be accepted almost as synonymous terms, for the only risk of vital importance is the occurrence of metastases, and the danger of these secondary growths is often in direct ratio to the time which elapses between the discovery of the growth and its removal. In other forms of malignant growth, and particularly in certain superficial slow-growing epitheliomata, risk of metastasis is almost nil, and the question of risk hardly enters into consideration. At times the whole question is complicated by the ineradicable antipathy to cold steel which some patients possess. The treatment of malignant epithelial neoplasms by the *x*-rays, which at present enjoys considerable favor in certain quarters, must be submitted to criticism along the lines above mentioned if its true value is to be determined. Numerous papers bearing on this subject have been published in the past few years, and the recent reports of Williams[1] and of Vose and Howe[2] give a good idea of what is to be expected from a clinical standpoint, and also of the changes which occur in new growths as a result of *x*-ray treatment. From the clinical experience it seems quite certain that the treatment is not to be relied on in all cases. The cases in which it is to be used must be selected with care, and, as a rule, only long-standing cases which have shown no tendency to metastases, or more acute cases in which the lesion is palpably superficial, should be subjected to the treatment. In other words, the type of growth which is especially suited to this form of treatment is the slow-growing superficial form of epithelioma commonly described as rodent ulcer. Further than this, the fact must be emphasized that the *x*-ray treatment of deeply-extending epitheliomata or carcinomata is not merely valueless but actually dangerous. It has been shown conclusively that in many such cases, even though the superficial parts of the growth may be destroyed, the more distant portions are often actually stimulated to increased proliferation. It can not, of course, be denied that there are cases recorded in medical literature in which relatively deep-seated growths have been favorably influenced by *x*-ray treatment, but these cases form a very small minority and are merely the exception which proves the rule. The statement of some writers that the surrounding healthy tissue is spared is not confirmed by the observations of Vose and Howe, which show that if the rays be used

1. American Journal of the Medical Sciences, vol. cxxix, No. 3.
2. Journal of Medical Research, vol. xiii, No. 2. Abstracted in THE JOURNAL, p. 981.

strongly enough to cause more than superficial destruction of a growth they will also produce burns of the surrounding tissue. The deductions to be drawn from these facts are not very encouraging.

Medical News.

ILLINOIS.

City Gives to Hospitals.—The city council of Joliet has appropriated $1,000 each to St. Joseph's and Silver Cross hospitals.

Novel Way to Help Hospital.—J. W. Boice advertises that half of the proceeds of the auction sale of his farm implements and effects will be donated to the Rockford City Hospital. The sale was announced for March 21.

In Favor of Defendant.—In the case of George Barnes who claimed that he had been permanently injured by treatment at the hands of Dr. William M. Roberts, Norris, and wanted damages, the jury found for the defendant.

Silver Jubilee of Hospital.—On March 22, St. Joseph's Hospital, Bloomington, celebrated the completion of its first quarter century of work. Since its foundation the hospital has cared for 5,017 patients, 1,672 of which were charity cases.

Personal.—Dr. Henry Hatch, Quincy, has been forced by ill health to give up his practice for a time, and has gone away for rest and change.——Dr. John N. Shaff, Alton, physician of Madison County, is seriously ill from septicemia due to an operation wound.——Dr. Bird M. Lurnell sails for Europe Monday.

Chicago.

Cocain Conviction.—Dr. Adolph C. Brendecke was again fined $100 and costs for selling cocain without a prescription.

Bequests to Hospitals.—By the will of the late John Murphy, $2,000 each was bequeathed to St. Luke's, Mercy, Alexian Brothers and Presbyterian Hospitals.

Davis Memorial Tablet.—The senior class of the Northwestern University Medical School has erected a marble memorial tablet for the late Dr. N. S. Davis, in Davis Hall. It bears the inscription: "Good and Great, He Maketh the Earth Wholesome."

Deaths of the Week.—During the week ended March 18, 557 deaths were reported—equivalent to an annual mortality of 14.57 per 1,000. Pneumonia still led, with 103 deaths. Other principal death causes were: Consumption, 63; heart disease, 42; violence, 40; nephritis, 34; bronchitis, 31, and cancer, 22. Measles caused 8 deaths; scarlet fever, 2; smallpox, 3; diphtheria and whooping cough each, 11, and typhoid fever, 4.

In Spite of Repeated Warning.—Eighteen cases of smallpox were removed to the Isolation Hospital during the week. Of this number 11 never had been vaccinated; 7 had old scars, said to be from vaccinations made in childhood; not one had ever been revaccinated. The ages of those with old scars were 32, 33, 34, 42, 43, 46 and 47 years, respectively. Among the victims were 4 unvaccinated children under the school age and 1 child in school with a false certificate of vaccination, signed by a doctor.

MARYLAND.

Personal.—Dr. Joshua W. Hering, Westminster, has been appointed a member of the board of visitors of the Maryland Home for Feeble Minded.

New Hospital at Cumberland.—A private hospital has been incorporated at Cumberland, with a capital stock of $25,000, known as the Allegany Hospital, and has purchased an old mansion, which will be remodeled. Among the incorporators are Drs. Robert Y. Fechtig, Edward F. White, W. M. Hodges, Charles Brace, William B. Foard, Edwin B. Claybrook, Henry S. Wailes, George L. Broadrup, and Arthur H. Hawkins.

Baltimore.

Phthisis and Pneumonia.—The health report last week showed 38 deaths from pneumonia and only 16 from consumption.

Abortionist Sentenced.—Dr. Robert X. Giering, who was arrested about two weeks ago on the charge of performing a criminal operation, pleaded guilty when arraigned in the Criminal Court, March 18. On the request of the state's attorney, who said that there were extenuating circumstances, he was released on payment of a fine of $1,000.

Quarter Club Revived.—The Quarter Club, incorporated in 1902, for the purpose of collecting a fund for a state sanitarium for consumptives, and which was suspended by the great fire, has been revived. A series of lectures will be delivered and a book sale held next fall to raise funds. About 500 books containing authors' names will be sold by auction.

Ancient History of Typhoid.—At the last meeting of the Johns Hopkins Historical Club Dr. William H. Welch pointed out a passage in the writings of Thomas Willis, giving a very good résumé of the symptoms of typhoid fever and showing that he must have recognized that disease as a distinct entity. He described the intestinal ulcers as resembling smallpox pustular ulcerations.

To Help Visitors.—A bureau of information in charge of a committee of the medical staff has been opened at Johns Hopkins University Hospital to look after physicians visiting Baltimore and to extend to them invitations to the daily operative and clinical work of the various departments. A cordial welcome is extended to all such persons, and everything will be done to make their stay in the city agreeable and profitable.

"Christ's Institution" Again.—A graduate from the "Medico-Chirurgical and Theological College of Christ's Institution," a nondescript but chartered corporation of this city, run by negroes, has applied for a mandamus to compel the board of examiners of the Medical and Chirurgical Faculty of Maryland to issue him a license to practice in this state. The case is set for hearing April 1. This is the institution in whose application for a charter the name of one of the faculty appeared by a crossmark. Shortly after it started each member of the faculty had attached to his name in the catalogue from three to five degrees, A.B., A.M., B.D., D.D., M.D., etc., including the individual who had had to make his mark.

MASSACHUSETTS.

Milk Dealers Fined.—Ten milk dealers have been fined in the Municipal Court on complaint of the Boston Board of Health.

Want Place for Lepers.—The State Board of Charities is endeavoring to find a place for its leper colony and is now considering the islands of Boston Harbor. Hangman's Island, near Quincy, was proposed, but that city urgently objected. Now Apple Island and Governor's Island or a part of Gallops Island are proposed. On the latter are located the quarantine station's hospitals.

Personal.—After a service of twenty-eight years Dr. Frank W. Draper has resigned as medical examiner of Suffolk County, to take effect June 30.——Dr. George L. West, Newton Center, has been appointed medical examiner of the Seventh Middlesex District in place of Dr. Julian A. Mead of Watertown.——Dr. George H. Francis has been elected a member of the water board of Brookline.

Grenfell's Mission to Labrador Fishermen.—Dr. W. T. Grenfell of the Labrador Deep Sea Mission has been speaking for two or three weeks in or near Boston, endeavoring to secure funds for his hospitals and medical work among the fishermen of the Labrador coast. One outcome of the interest he has aroused will be the company of an expert aurist on his next trip north, all of whose expenses will be met by a leading specialist.

Tuberculosis Hospital Agitation.—A strong effort is being made to induce the legislature to permit the city of Boston to borrow outside of the debt limit, $150,000, to be expended for the purpose of establishing a municipal hospital for tuberculosis. The strongest opposition to this plan seems to center about the hope that the Brigham Hospital, with its $5,000,000 or $6,000,000 endowment may be devoted, largely at least, to this purpose.

Sewerage Expenditures.—The Metropolitan Water and Sewerage Board expended last year on account of waterworks $2,174,498, and for the sewerage department $829,941. Of this last about $250,000 was for maintenance and the rest forms a part of the grand total of $13,666,832, the cost of the sewerage systems. The Charles River will, they think, soon reach its limit of capacity, that is, for 183,000 population. Wachusett reservoir will be ready for use within a year.

Osteopathy Bill Defeated.—The bill to regulate osteopathy, which would have allowed 90 osteopaths now practicing in the state to be registered without examination was defeated in the house. Dr. Frank G. Wheatley, North Abington, who is this year for the second time in the legislature, and who is

professor of materia medica and therapeutics at Tufts Medical School, argued most forcibly against the proposed bill.

Alleged Unauthorized Autopsy.—Judgment of $1,000 damages against Dr. Herbert B. Howard, superintendent of the Massachusetts General Hospital, and Dr. Elisha Flagg, formerly connected with that hospital, has been granted in a suit brought on a claim of an autopsy on a boy six years old without the permission of the parents. It is the second suit, the first ending in an award of $50 damages and consequent appeal. The physicians claimed that the undertaker gave permission.

NEW HAMPSHIRE.

New Hospital for Berlin.—The Sisters' Hospital at Berlin is now almost ready to receive patients. It will be dedicated about Easter.

Bequest.—By the will of John J. Pickering, Portsmouth, $45,000 is bequeathed for the erection of a new building for the Cottage Hospital of that city, to be called the Pickering Annex. An additional $5,000 is devised to the hospital.

Kerosene Dangerous Fire Lighter.—Dr. Henry Dodge, Webster, was severely burned while endeavoring to start a fire with kerosene. An explosion followed and the blazing oil set fire to his clothing, but his wife, by intelligent presence of mind, extinguished the blaze.

Legislative Enactments.—The state legislature just adjourned appropriated $50,000 for the purchase of a site for a state sanitarium for consumptives, and for the erection of the building.——A bill regulating the sale of patent and proprietary medicines which contain alcohol or certain specified dangerous drugs was defeated.

NEW JERSEY.

Petty Thieving at Camden.—Camden physicians have recently been victims of a petty thief. Dr. Frederick W. Marcy has lost a carriage clock, and Dr. Ernest S. Ramsdell an overcoat.

Protests Filed.—Strong protests have been filed with the legislature against the enactment of a law establishing a state board of examiners for osteopaths, by the physicians throughout the state.

Personal.—Dr. Edwin Tomlinson is seriously ill at his home in Gloucester City, N. J.——Dr. Frank W. Lockwood, East Orange, has been elected secretary of the local board of health. ——Drs. Willis C. Noble, William H. Areson, James T. Hanan and Stella S. Bradford have been appointed medical inspectors for the Montclair schools.——Dr. Charles A. Limeburner, visiting physician at the City Hospital, Jersey City, has resigned.

NEW YORK.

Site for New State Hospital.—The assembly practically endorsed the selection of the Baker farm in Washington County as the site for the proposed new hospital.

Personal.—Dr. Julius Ullman has been appointed special examiner for patients suffering from tuberculosis who desire admission to the State Hospital for Incipient Tuberculosis at Ray Brook.

Officers Elected.—Erie County Medical Association has elected officers as follows: President, Dr. Arthur Bennett; vice-president, Dr. Grover Wendt; secretary, Dr. David E. Wheeler, and treasurer, Dr. Adolph H. Urban.

Elsberg Bill Advanced.—This bill, abolishing the office of coroner in New York City, was advanced to a third reading in the senate, but was recommitted for a hearing before the state cities committee. It is understood that an endeavor will be made to effect a compromise by which Brooklyn will be enabled to keep her coroners.

Oppose Osteopathy Bill.—Dr. E. Eliot Harris, chairman of the committee on legislation of the New York State Medical Association, had sent a personal letter to the members of the profession enclosing a circular giving the reasons why the bill entitled "An Act Regulating the Practice of Osteopathy in the State of New York," should be defeated. He requested to this end that each physician should write a personal letter in opposition to the bill to the senator and to the assemblyman representing his district in the legislature.

New Water Supply Bill.—A new Apgar bill is now before the legislature which seeks to send New York City to Lake Erie or to Lake Ontario for its water, and incidentally, through the state commission created by the bill, to supply the various communities lying along the line of the proposed metropolitan aqueduct. The advocates of this bill hold that if the cities and villages of this state were supplied from the Great Lakes it would result in a tremendous decrease in the death rate, as even the best local supplies are liable to become contaminated.

Against Pure Drug Bill.—The pharmacists who appeared before the senate committee of public health opposed the Grady pure drug bill on the ground that the effect of the whole measure was to protect foreign patented articles, which sold here at prices several hundred per cent. higher than they brought at home. This bill is modeled almost word for word after the Heyburn bill recently before congress. It is urged that, as it provides that no article shall be labeled with the name of a foreign product when not of foreign origin, it would prevent our druggists from selling many well-known medical drugs under the names by which the public know them.

January Disease and Death.—The monthly bulletin of the State Department of Health for January shows 11,875 deaths, corresponding to an annual death rate of 18.5 per 1,000. Of these 2,200 were reported for the rural towns not separately specified in the bulletin, which is a decrease of 200 from that of last January, but is the same as that for December last. There is a decrease in diphtheria, an increase in pertussis and a material increase in consumption and pneumonia. The five large cities show an increase over the December mortality, about the same relatively as the rural towns. For the state there are 400 more deaths than in December, and there is the same increase above the average mortality of the month. Pneumonia leads the important causes of death, with 1,800 deaths, which is more than occurred in January last; consumption caused 1,166, or about the same as in two months under comparison, and nephritis 780. Cerebrospinal meningitis caused 150 deaths, most cases occurring in New York City, where it is epidemic. Typhoid fever caused 100 deaths, which is 50 less than the average for several years in January. Measles and scarlet fever have a moderate mortality, and are not prevalent to any material extent in the state, with exception of Buffalo, where measles has been epidemic. Pertussis caused 45 deaths; diphtheria 260, which is a decrease from the average, and there were 175 deaths from influenza reported from outside New York City and Buffalo. There has been no mortality from smallpox.

New York City.

Skim Milk Tabooed.—No skim milk can be sold in this city by permission of the Health Department, and the greatest caution will be exercised to see that none is used for purposes of adulteration.

Aid for Bellevue.—The board of estimate has granted $850,000 for the extension of the hospital building and for its equipment. Special attention will be given to consumptive patients in the new building, where there is but slight accommodation. It will take about ten years to complete the extensions planned, which will provide for 2,800 patients.

Contagious Diseases.—There were reported to the sanitary bureau for the week ending March 11, 480 cases of tuberculosis, with 183 deaths; 296 cases of diphtheria, with 26 deaths; 349 cases of measles, with 10 deaths; 270 cases of scarlet fever, with 19 deaths; 30 cases of typhoid fever, with 9 deaths; 159 cases of chickenpox, 1 case of smallpox and 76 deaths from cerebrospinal meningitis.

Cerebrospinal Meningitis.—The epidemic of this disease continues to excite alarm. A number of cases have broken out in West Twelfth Street, where four cases have been reported from one family. The number of cases in this vicinity is attributed to the bad condition of the streets. The Health Department has received $5,000 from the board of estimate and apportionment with which to investigate this disease. The members of the commission to be appointed for this work are: William M. Polk, Walter B. James, William P. Northrup, Simon Flexner, Joshua M. Van Cott, E. K. Dunham, and William K. Draper.

Work of County Medical Society.—Camille Francois was arrested on the charge of violating the medical laws in a hairdressing establishment.——Dr. John W. Pirillo is held on the charge of having signed a death certificate for an unlicensed practitioner of medicine.——Reuben N. Mayfield has been arraigned and held for trial on $2,500 bail charged with practicing medicine unlawfully. He stated that he was associated with Dr. Samuel D. Koch and was entitled to the letter heads "Dr. Koch's Sanitarium." Another letter said to have been used as an advertisement purported to have come from Dr. Robert Koch.

Society of Medical Inspectors of the Health Department.—This society was organized at a meeting of the medical inspectors of the Health Department, held March 3. The object of the society is the study and discussion of problems in hygiene and public health, and the promotion of good-fellowship among the members. Monthly meetings will he held, at which scientific papers will be read and discussed, and addresses delivered by invited superior officers of the department and other sanitarians and public officials. Dr. Edward M. Thompson, chairman of the committee on organization, presided at the meeting; a constitution was adopted and the following officers were elected: President, Dr. Augustine C. McGuire; vice-president, Dr. Otto Jahn; secretary, Dr. Edward M. Thompson; treasurer, Dr. Leopold Marcus; executive committee, Drs. Joseph Baum, Helen Knight, Samuel A. Buchenholtz, Thomas A. Neafsey and George DeSantos Saxe.

OHIO.

Conditional Gift.—It is announced that John D. Rockefeller has given $25,000 to the Women's and Children's Free Hospital, Cleveland, conditional on the raising of a like amount by the institution.

Must Conform to Medical Law.—The Supreme Court of the state has decided that so-called "Christian Science" treatment comes within the scope of the medical laws of the state and that the eddyist who attends the sick must conform to the laws governing the practice of medicine.

Personal.—Dr. Perry R. Brubaker, Bucyrus, will locate for practice in the Philippine Islands.——Dr. Sigmar Stark, Cincinnati, was in a serious runaway accident, March 8, but escaped with only a few scratches and bruises.——Dr. Gustavus A. Doren, Columbus, is seriously ill with heart disease.

In Trouble.—Dr. John Hutchfield, Columbus, was found guilty of attempting to suborn a witness, and was sentenced to thirty days' imprisonment in the county jail, and fined $100 and costs.——"Dr." J. A. Taff, who has been practicing medicine in Ohio without a license, plead guilty to the charge, at Uhrichsville, March 1, and was fined $40 and costs.

Left to Wrong Hospital.—It is claimed that the bequest of $9,000 to St. Elizabeth's Hospital, Dayton, from the estate of the late Philip Ecki, was intended for the Miami Valley Hospital. As the deceased was a devout Lutheran, it would seem unlikely that he should bequeath money to a Roman Catholic institution. The matter will be setled in the courts.

OREGON.

Useless Health Offices Abolished.—The legislature has passed a bill abolishing state health offices for Oregon ports at Astoria, Umpqua, Yequina and Coos Bay.

Sanatorium Open.—It is announced that the Heppner Sanatorium is now ready to receive patients. The staff is composed of Drs. Archie K. Higgs, Frank B. Kistner and Winnard of Heppner, and Drs. Alexander Reid and Bruce of Ione.

Low Death Rate.—During 1904, Portland had 1,351 deaths, equivalent to an annual death rate of 9.01 per 1,000. Of the decedents 801 were male and 550 female; 1,284 white, and 67 colored. Tuberculosis caused directly 149 deaths, and indirectly, more than 200.

Cancer Specialist Ousted.—The State Board of Medical Examiners has scored a victory in their fight against J. L. Bohannon, a cancer specialist of Portland, who has been practicing without a license. Rather than stand trial, the irregular compromised the case, repaying the patient $50 collected; paying a fine of $50, and agreeing to leave the state.

PENNSYLVANIA.

Sanatorium Burns.—Highland Inn, a sanatorium at Dallas, was burned to the ground, March 13, at a loss of $35,000, but without loss of life or injury to the inmates.

Ill and Injured.—Dr. August J. Kohrnak, Braddock, who has been in grave danger for several weeks because of septicemia from an operation wound, was discharged from Mercy Hospital, Pittsburg, March 1.——Dr. Charles B. Noecker, Scranton, was operated on for appendicitis, March 12, and is making good progress toward recovery.

Hospitals Benefit.—By the will of the late Charles Lockhart, Pittsburg, $40,000 is bequeathed to the Western Pennsylvania Hospital; $20,000 to Passavant Hospital; $20,000 to Allegheny General Hospital, and $15,000 to the United Presbyterian Memorial Hospital for Women and Children.——By the will of the late Benjamin F. Dilley, Wilkesbarre, $5,000 is devised to Mercy Hospital in that city.

Money to Fight Tuberculosis.—Two bills to establish state hospitals for the treatment of incipient tuberculosis were passed by the house of representatives, March 14. They appropriate $200,000 for each institution, one of which is to be located in the state forestry reservation at Mont Alto, Franklin County, and the other in Western Pennsylvania. They are to be strictly state institutions and under absolute control of the state forestry commissioner.

Personal.—Dr. Walter S. Stewart, Wilkesbarre, has been commissioned surgeon, with rank of major, and assigned to the Ninth Infantry; Dr. George L. Hays, Pittsburg, major and surgeon, and assigned to the Fourteenth Infantry, and Dr. William G. Weaver, Wilkesbarre, captain and assistant surgeon, and assigned to the Ninth Infantry.——Dr. Henry J. Sommer, Jr., Norristown, has been elected pathologist to the State Hospital for the Insane.——Dr. John Fay, Altoona, on the occasion of his semi-centennial of practice, was given an informal reception at the Altoona Hospital, March 10.——Dr. William Herbst of Trexlertown celebrated his fiftieth anniversary in the practice of medicine March 12.

Cattle Vaccinated Against Tuberculosis.—At the recent meeting of the Pennsylvania State Veterinary Association, held in Philadelphia, Dr. Leonard Pearson of the University of Pennsylvania reported on some work he has done in conjunction with Dr. S. H. Gilliland on the vaccination of cattle against tuberculosis. Experiments on this subject have been carried on for nearly two years under the auspices of the State Live Stock Sanitary Board. The cattle under experimentation are on a farm in Delaware County. Dr. Pearson showed that animals may be vaccinated in such a way as to protect them against this disease. He is directing his efforts now toward simplifying the method of vaccination, so that it may be applied on a large scale to cattle on farms, with as little cost as possible.

Philadelphia.

Personal.—Dr. Henry C. Chapman, professor of physiology and medical jurisprudence in Jefferson Medical College, has left for Europe.

New Nurses' Home.—The new nurses' home of the Women's Hospital of Philadelphia was dedicated with appropriate ceremonies on Wednesday, March 15. The building has just been completed at a cost of $20,000.

An Ophthalmologic Week.—A special week in diseases of the eye will be held at the Philadelphia Polyclinic from April 3 to 8, during which special efforts will be made to present an interesting series of lectures, demonstrations, operative cases, etc.

Sanitary Trolley Cars.—For the betterment of the sanitary conditions of the trolley cars, all cars of the Philadelphia Rapid Transit Company in the future will be equipped with cane-covered seats, instead of carpet and plush-covered seats as at present. This change is being made at the request of the officials of the local board of health.

Hospital Dedicated.—The Mount Sinai Hospital, located in the Hebrew section of the city, was dedicated with appropriate exercises, March 12. The building is a four-story brick structure and thoroughly equipped. The first floor contains the offices, prescription department and dispensaries. The second floor contains two large and three small wards. The operating and physicians' rooms are located on the third floor, and the fourth floor contains the children's wards, nurses' rooms and kitchen.

Health Report.—The deaths from all cases recorded during the week aggregated 599. Among the principal causes of death were typhoid fever, 19; scarlet fever, 2; diphtheria, 10; influenza, 5; cerebrospinal meningitis, 2; tuberculosis of lungs, 68; cancer, 18; heart disease, 61; acute bronchitis, 12; pneumonia, 75; Bright's disease, 37, and suicide, 3. The number of cases of contagious disease reported was 356, with 32 deaths, as compared with 272 cases and 24 deaths from last week, showing an increase of 84 cases and an increase of 8 deaths for the week. There were 274 new cases of typhoid fever reported, with 19 deaths, as compared with 178 cases and 12 deaths for the preceding week.

Changes in Staff.—The following appointments have been made at the Philadelphia General Hospital: Dr. Joseph Sailer, visiting physician; Drs. William Pickett and Daniel J. McCarthy, visiting neurologists; Dr. J. H. McKee, visiting pediatrist; Drs. Hilary M. Christian, E. Hollingsworth Siter, and Henry Tucker, visiting genitourinary surgeons; Dr. G. Paul

La Roque, assistant surgeon; Drs. Courtlandt Y. White, John W. Hunter, and George Norris, assistant physicians; Dr. Charles C. Norris, assistant obstetrician; Dr. Samuel McClarg, assistant neurologist; Dr. Howard Childs Carpenter, assistant pediatrist; Drs. Charles A. Hatfield, T. Y. Ullom, J. W. Irwine, and J. Hamilton Small, assistant physicians, department for tuberculosis; Drs. Macy Brooks, Alexander Uhle, and Howard Dahoney, assistant genitourinary surgeons; Dr. H. R. Alburger, assistant anesthetist, and Drs. Thomas B. Holloway and Ward Brinton, registrars.

Meningitis Here.—Two deaths from a fulminant type of cerebrospinal meningitis have occurred in the city during the past week, and another hopeless case was also reported March 17. Every effort is being made by the health authorities to prevent the spread of this highly malignant disease, and it is stated that the health department will ask for an appropriation of $5,000 to $10,000 to make special investigations regarding the malady. The last victim attacked by the disease was a small child in the southern part of the city, and the school which he attended has been closed and subjected to fumigation. The home of the child has been placed under rigid quarantine. The health authorities say that in the future all houses where this disease exists will be placarded with yellow contagious signs. It will be fought along the same lines as smallpox, and, if anything, with even more vigor. Cerebrospinal meningitis has been prevalent in this city on several occasions; in 1899 there were 146 cases recorded; 20 of these were treated in the Municipal Hospital. In 1863, and again in 1865 the city was also visited by a slight epidemic of the disease. According to Pepper 2,575 cases of cerebrospinal meningitis were reported in this city between 1863 and 1891.

UTAH.

Correction.—The name of Dr. C. C. Snyder was omitted from the list of the staff of the Dr. W. H. Groves Latter-day Saints Hospital, Salt Lake City, which appeared in THE JOURNAL of March 4.

University to Have Pre-Medical Department.—It is announced that a pre-medical department is to be added to the University of Utah. It will be under the direction of Dr. Ralph V. Chamberlain, and will fit its students for the junior year in medical college.

Physician Wins Suit.—Dr. Joseph A. Richards, Salt Lake City, was granted a non-suit in the damage case brought against him by Mary Morris, who claimed malpractice in the improper setting of a broken ankle, and desired to recover $5,000 damages therefor.

WASHINGTON.

New Hospital Open.—The new Providence Hospital, Everett, was opened for the reception of patients, March 1.

County Medical Society Election.—At the annual meeting of the Pierce County Medical Society, held recently in Tacoma, the following officers were elected: President, Dr. Grant S. Hicks; vice-president, Dr. Leon L. Love; secretary and treasurer, Dr. A. DeY. Green, and censors, Drs. Thomas B. Curran, George H. McGeer and George D. Shaver, all of Tacoma.

Personal.—Dr. William C. Gibson, Seattle, sailed for Europe, March 21.——Drs. Charles P. Thomas, William H. Olds, Arthur R. Cunningham, A. A. Matthews, Charles E. Grove and S. B. Hopkins were elected to the staff of St. Luke's Hospital, Spokane.——Dr. Euclid Van Zandt, Bellingham, has been made acting superintendent of the Western Washington Hospital for the Insane, Fort Stellacoons, vice Dr. Alexander H. McLeish, resigned.

WEST VIRGINIA.

Seven Physicians in Legislature.—There are at present seven practicing physicians who are members of the state legislature.

Personal.—Dr. Cassius H. Ice, Mannington, has resigned as a member of the Marion County Board of Health, and has been succeeded by Dr. I. W. Beaty.——Dr. Addison K. Ross, Parkersburg, has been appointed physician of Wood County.

Annual Election.—At the annual meeting of the Cabell County Medical Society at Huntington, the following officers were elected: Dr. Corydon R. Enslow, president; Dr. J. E. Rader, vice-president; Dr. Thomas W. Moore, secretary; Dr. Isaac R. Le Sage, treasurer, and Drs. Charles T. Taylor, Edward S. Buffington and Harry C. Solter, censors, all of Huntington.

GENERAL.

Dinner to Dr. Osler.—Previous to his departure for England, to assume the chair of medicine in the University of Oxford, a dinner will be given to Dr. William Osler at the Waldorf-Astoria, in New York City, at 7:30 p. m., May 2. Dr. J. P. Crozer Griffith, 1810 Spruce street, Philadelphia, is in charge of subscriptions.

Yellow Fever in Panama.—In the *Public Health Reports* is printed the following official summary of yellow fever cases on the Isthmus: Total number of cases on the Isthmus of Panama from July 1, 1904, to Feb. 1, 1905, 31; deaths, 10. Total number of cases from Feb. 1, 1905, to Feb. 25, 1905, 10; deaths, 4. Total, 41 cases; 14 deaths.

CANADA.

Alexandra Hospital Being Built.—The new English hospital for contagious diseases in Montreal is to be called the Alexandra Hospital. It will occupy a block of land whose frontage and two sides will be 500, 300 and 450 feet, respectively. In the group of buildings there are to be nine separate ones, and there will be seven buildings constituting the hospital proper. Each pavilion is to have its own nursing staff and each will be entirely isolated.

Bishop's to Amalgamate with McGill.—At a recent meeting of the medical faculty of Bishop's College University, Montreal, it was unanimously decided to amalgamate with the medical faculty of McGill University. The present term will be completed at Bishop's, and the most generous terms will be granted the faculty of Bishop's, as well as her students. All of the staff at Bishop's will be granted associate positions on the teaching staff of McGill.

Canadian Association for the Prevention of Tuberculosis.—The fifth annual meeting of this society was held in Ottawa on March 15. A large number of medical men were present from all over the Dominion. The association decided to ask the federal government to appoint a royal commission to deal with the entire question of tuberculosis as it affects the Dominion of Canada. At the evening meeting, at which the governor-general presided, Professor J. George Adami delivered an address on "Adaptation and Consumption." Senator Edwards was re-elected president, and the Rev. Dr. Moore, Ottawa, was re-elected secretary.

New Brunswick Insane Hospital Report.—To the New Brunswick Hospital for the Insane, during the past year, 141 new patients were admitted, 80 of whom were men and 61 women. During the year 41 men and 39 women were discharged, while 42 men and 32 women died in the institution, leaving 290 men and 264 women in the institution at the end of the regular hospital year, Oct. 31, 1904. Of those discharged 34 men and 30 women were considered cured; 3 were improved and 3 were unimproved. Of the 141 admitted to the hospital, 117 were admitted for the first time, and the majority of those admitted had passed middle life. The report also states that of the 716 cared for during the year, all but 100 were cared for by the province.

Winnipeg Hospital Report.—During the year 1904 the Winnipeg General Hospital cared for 3,868 patients in its wards, as compared with 2,928 in 1902 and 3,354 in 1903. The total receipts amounted to $168,629.06 and the expenditure was $175,636.63. Of the total number treated during the year, 271 died, a mortality of 7.06 per cent. The total number of typhoid fever patients treated was 728. Of these 180 were admitted in October and 166 in September. Between October 1 and December 15 there were never less than 148 cases in the wards. The number of patients in the wards on Jan. 1, 1904, was 151; the number of births was 141; the greatest number of patients on any one day was 287. In the outdoor departments there were 4,772 consultations.

FOREIGN.

International Association of the Medical Press.—The conference of the delegates of the International Association of the Medical Press will be held this year at Berne, April 27. The president of the association is Cortezo of Madrid, editor of the *Siglo Medico*.

French Congress of Alienists and Neurologists.—The fifteenth congress will be held at Rennes, August 1 to 7, 1905. The questions appointed for discussion are "Hypochondria," "Ascending Neuritis" and "Balneotherapy and Hydrotherapy in the Treatment of Mental Affections."

Medical Study Trip to German Spas.—The annual study trip for physicians and their families is announced to start from Munich September 13. After a trip through a number of watering places, the party arrives at Meran and disbands the same day that the Naturforscher Congress assembles there. Among the spas to be visited are Ischl, Gastein, Levico, Roncegno and Arco.

Contract Practice in France.—The medical officers of a sick benefit society at Granville, France, insist on being paid 30 cents a visit instead of the previous rates of 20 cents. The physicians have published a statement, explaining that the sick benefit society is largely made up of members who are abundantly able to pay for individual private attendance, and that the society is a comparatively wealthy one, well able to afford the increased rate.

Right to Oppose Disinfection of House.—A resident of Rio de Janeiro refused to allow the disinfection of his house after a case of yellow fever therein. He appealed to the courts to protect him against the officers of the public health service who insisted on the legal compulsory disinfection. The *Semaine Médicale* states that the courts sustained him in his contention, and decided that a house can not be disinfected without the consent of the resident.

Celebration of the Semicentennial of the Laryngoscope.—Scientific societies—medical and musical—and royalty vied with one another in presenting homage to the centenarian, Manuel Garcia, March 17, at London, the remarkable occasion being his hundredth birthday and at the same time the semicentennial of his invention of the laryngoscope. He is a native Spaniard, long resident in London, and as a professor of vocal music he was the first to demonstrate the larynx in the living subject. His communication on the subject was presented to the Royal Society of London in 1855. A committee was formed a year or so ago to arrange for the suitable celebration of the anniversary, as was mentioned in THE JOURNAL. A portrait was presented to him, painted by Sargent, and the day closed with a banquet at the Hotel Cecil. Numerous delegations from scientific, medical and musical societies of Europe and America were present, with representatives of the kings of England and Spain and the emperor of Germany, and a large gathering of notables. Sir Felix Semon proposed Signor Garcia's health, whom he addressed as "my great and revered master." He commented on the remarkable fact that two professions which had so few points in contact—medicine and music—should meet to do homage to this great centenarian. It is also remarkable that Garcia still retains his physical and mental faculties when we know that he retired from the operatic stage in 1829 because his physique was not equal to the strain. During his brief career as an opera tenor he came to this country as a member of the first Italian opera company that ever visited our shores. He invented the laryngoscope to aid him in his teaching of vocal music, to study the behavior of the vocal cords during the act of singing. Its importance for the diagnosis of disease was not recognized at first, as it was supposed that only trained muscles were able to allow the view of the throat, but Garcia's writings inspired the physicians Türck of Vienna and Czermak of Pesth to experiment further and perfect the technic of laryngoscopy. Their strife for priority, two or three years after Garcia's discovery, spread the knowledge of the new art through the medical world.

LONDON LETTER.

The Vitality of the Typhoid Bacillus in Shellfish.

The numerous outbreaks of typhoid fever in England due to sewage-contaminated oysters have been reported in THE JOURNAL, and the fact pointed out that the whole estuary of the Thames was so polluted by sewage that shellfish taken from it were not safe to use as food. This gave rise to the "oyster scare" in London, which, for a time, crippled the trade in that shellfish. Actuated, no doubt, by a motive which is easily comprehensible, though in no way discreditable, the Fishmongers' Company of London requested Professor Klein to conduct experiments in order to ascertain the vitality of the typhoid bacillus in oysters and other shellfish. The results so far obtained have just been published as a preliminary report. About 160,000,000 typhoid bacilli were introduced into the interior of the shells of oysters. Half of the number were placed in clean seawater, which was changed ever twenty-four hours; the others were kept dry in a cool chamber. The number of bacilli present was then estimated from day to day. Other experiments were performed, such as placing oysters in sea water containing a culture of the typhoid bacillus. Similar experiments were performed with cockles and mussels. Professor Klein drew the following conclusions: 1. Oysters readily take up into their interior the typhoid bacillus introduced into their shell or into the surrounding sea water. 2. Oysters clean at starting rapidly clear themselves of the ingested bacilli if kept in clean sea water which is frequently changed. 3. They clear themselves to a less extent and more slowly if kept out of the sea water. 4. Oysters from a polluted locality clear themselves of the ingested typhoid bacillus to a less extent and at a slower rate, even if kept in clean sea water, than oysters clean at starting. 5. Oysters from a polluted locality retain the bacillus to a larger extent if kept out of water. 6. The process of clearing themselves of the bacillus can not be owing to the oyster merely passing out the bacillus, but must be largely due to devitalizing the microbe. 7. Oysters from a polluted locality containing a large number of the colon bacilli rapidly clear themselves, whether kept in or out of water. This shows that the bacillus coli is foreign to the oyster, and is rapidly destroyed by it. 8. However largely infected with the typhoid bacillus, the oysters present no sign to the eye of such infection. 9. Cockles readily embody the typhoid bacillus present in sea water. The number in the body of the cockle increased for five days after the cockles had been removed from the infected water and kept in clean sand. They subsequently slowly diminished. 10. Mussels embody the typhoid bacillus to a greater extent than oysters or cockles. The number diminishes gradually—more slowly than in oysters but more quickly than in cockles.

Correspondence.

Medical Missionary Association of China.

ST. JOHN'S COLLEGE, SHANGHAI, CHINA, Feb. 14, 1905.

To the Editor:—The Medical Missionary Association of China held its annual meeting in Shanghai. Forty-two physicians were present, representing eight of the eighteen provinces, Manchuria and Formosa. The most important subject discussed was the instruction of the Chinese in scientific medicine and the means by which this is to be accomplished. The association put itself on record as favoring the establishment of medical schools in the important centers throughout the empire. Steps have also been taken to provide up-to-date textbooks in the Chinese language. For some years the association has had a committee on medical nomenclature. In 1902 this committee published a vocabulary of terms used in anatomy, histology, physiology, pharmacology and pharmacy; and in 1904 an additional list of terms in pathology, medicine, surgery, obstetrics and gynecology was published. There is also being prepared a list of terms in materia medica and bacteriology. The association is unanimously in favor of appointing a translating and publishing committee to see what new books are needed and what old books require revising, to find translators or editors, and to consider proposals by members of the association to undertake the translation of particular works.

The association is to own and control these books so that they shall form a consistent series. The expense of the cuts used and the printing will make the initial cost considerable, but it is estimated that after the first editions are exhausted they will yield a profit. The profit will be used to issue new books.

When practicable, it is proposed to issue a medical journal in Chinese in order to enable students to keep in touch with the advances in medical science in foreign lands. The benefit of this work in the thorough training of students and in the alleviation of the suffering of countless Chinese will be widespread. A balance of $400 (Mexican) is in hand for this work and over $400 more was subscribed by the physicians present.

It is to be hoped that many who are interested in the higher education of the Chinese and the relief of suffering humanity will aid financially in the establishment of this work.

Yours sincerely,

C. S. F. LINCOLN, A.B., M.D.,
Secretary and Treasurer Medical Missionary Association of China.

Pharmacology.

[The above title has been selected for this new department because it appears the best one to define its purpose and scope. While the use of the term pharmacology has been confined by some authors to the action of drugs, academically called pharmacodynamics, considered etymologically it is the broadest and most comprehensive term that can be applied to the science of drugs. This is also the original application of the term by German and French authorities, such as Husemann and Littrè respectively, who define pharmacology as comprising practically all the sciences of material medicinal agents, viz., materia medica, pharmacodynamics, pharmacy, pharmaceutic chemistry and pharmaco-therapeutics, or of drug-therapy as distinguished from other agents used in the treatment of disease. The title also has been adopted for that section of the American Medical Association formerly called the Section on Materia Medica, Pharmacy and Therapeutics. It seems to represent all the different phases of the question to be considered better than any other title suggesting itself. Under this heading we propose to publish matter of interest on the broad subject of pharmacology as included in this definition.]

EXPRESSIONS ON THE ANNOUNCEMENT.

Comments on the Plan of Work as Temporarily Outlined by the Council on Pharmacy and Chemistry.

A large number of replies to the preliminary announcement have been received by the Council on Pharmacy and Chemistry. We make quotations from a few:

E. R. SQUIBB & SONS: Although we fully appreciate the great difficulties that the council will experience in the carrying out of its appointed task, we unhesitatingly place ourselves on record as most heartily in accord with the program of work announced. The men composing the council are sufficient guarantee to us that their struggle with the problems before them will be carried on with intelligent regard for the various legitimate interests involved, and with a grim determination to reach practical results. Their labors surely will be an effort in the right direction, for safe and honest service against unsafe or dishonest practices. We shall at all times be happy to co-operate with the council to the fullest extent of our power.

MERCK & CO.: You may be assured that we shall be very happy to co-operate with the council in its labors and to supply a list of our articles, and all the information regarding them that you may desire. It has always been our endeavor to work in harmony with the medical profession of the country, as represented by your esteemed Association, and, therefore, in following the rules adopted by your council governing the admission of articles to the book, "New and Non-Official Remedies," we shall only be following our established practice.

FARBENFABRIKEN OF ELBERFELD CO.: We send to-day a package by express containing samples of all our products. The labels on the various packages contain all the information regarding patents and trademarks required by your council. We have already begun to comply with the resolutions adopted by the Section on Pharmacology, which requests manufacturers to put on the packages not only the trademark name, but also the chemical designations of the preparations. . . . . We congratulate your council on the initiation of this important work, and hope that it will promote the interests of ethical medicine and pharmacy.

SEARLE & HERETH CO.: We do not hesitate to state that we approve very heartily of the movement. The ends you are striving for are very desirable, indeed, and it is our desire to co-operate with you as far as we can consistently.

RUFUS CROWELL & CO., Somerville, Mass.: I feel that it is the most important step taken in recent years in this country, as it holds out at least a ray of hope to the manufacturers who are trying to conduct an honest and ethical business. If there is anything that we can do to help further the idea, I shall only be too glad to help, and I hope that the outcome of it will be a national bureau or one under the Council on Pharmacy and Chemistry, by which a new drug can be examined, where nothing but an ethical article will be recognized, and where a medicine that is really an advance in therapeutics may receive a cachet entitling it to recognition from the profession. Do not hesitate to ask for any assistance that I can give you.

FRITZSCHE BROTHERS:. We are heartily in accord with any and every movement which aims at the separation of the wheat from the chaff, and, indeed, believe that with the issue of the book as proposed a pioneer and systematic step has been taken in the right direction. Desultory writings tending toward reformatory movements serve well as an initiatory purpose, but fall short of ultimately obtaining its object. To accomplish this a systematic hammering is required and, fathered and fostered as this movement is by the A. M. A., it will make success a surety, and in the end rid the medical profession as well as that of pharmacy and in turn therapy of the nondescripts.

VICTOR KOECHL & CO.: We will be glad to co-operate with you in so far as the products that we control are concerned, and will give you all the information necessary to carry out your plan. . . . You have undertaken quite a contract, but, if it is carried out on the lines suggested, your work will be of invaluable service to the physician.

GARDNER-BARADA CHEMICAL CO.: Everything contained in the announcement and circular is unqualifiedly and absolutely indorsed. Every rule is conducive to good, and not one of these rules, even in its strictest interpretation, will harm any honest manufacturer. Our labels, etc., will be ordered to be changed as fast as the presses can print them.

THE WHITE CO.: We will do anything you may wish in connection with this movement. The members of this concern are entirely in sympathy with you, and will give you any information we have at hand. We are very glad to notice Rule No. 1, and think it is very much to the benefit of the profession that this rule is carried out to the fullest extent.

THE ORGANIC CHEMICAL MFG. CO.: The establishment of this Council on Pharmacy and Chemistry of the American Medical Association will be a bulwark for the protection of the good name of the American manufacturer, be he ever so poor. It will establish confidence in American-made remedies that have been "honestly made, ethically exploited and worthy of patronage by intelligent physicians."

THE AMERICAN FERMENT CO.: The work undertaken by the Council of Pharmacy and Chemistry of the American Medical Association must meet with the hearty approval of all worthy manufacturers, as it recognizes merit and the right of the manufacturer of really valuable products to protect himself, and to secure at least a part of the benefits derived from such work; while at the same time recognizing the right of the medical profession to be protected against many worthless and absurd products.

FREDERICK STEARNS & CO.: We desire to express our hearty sympathy with the purposes of the Council on Pharmacy and Chemistry of the American Medical Association as outlined in the circular accompanying your letter, for we believe that much good will result from the action thus taken if manufacturers comply promptly and cheerfully with these requests for information about their products. The history of our house since it was established fifty years ago shows that we have always contended against secrecy in medicine and we should certainly have to regard ourselves as recreant to our principles if we did not give our support to this movement. Accordingly, therefore, we have prepared and submit herewith statements regarding those of our products that are more or less proprietary and that are prescribed by physicians, giving the information asked for by the council as we understand it. If, however, this information is insufficient in any respect, we are ready to supplement it as may be necessary.

A DEFENDER OF SECRET NOSTRUMS.

Last week we were favored by several manufacturing pharmacists with a copy of a letter they had received from the owners of the *New York Medical Journal*. The letter was practically the same in each instance, and evidently was sent to a large number of advertisers (but not to physicians, however, so far as we know). The letter is so unique that we

New York Medical Journal
and Philadelphia Medical Journal
CONSOLIDATED.
A Weekly Review of Medicine. Established 1865.

A. R. ELLIOTT PUBLISHING COMPANY.
66 West Broadway, NEW YORK.
NEW YORK, PHILADELPHIA, CHICAGO.

TELEPHONE CONNECTION.

New York, March 14, 1905.

[redacted]

Chicago, Ill.

Gentlemen:

Regarding the recent action of the American Medical Association we beg to say:-

Most sane persons are disposed to regard the personal property which their exertions have created as peculiarly their own; and any suggestion that they part with it would probably be treated with derision.

This seems, in essence, to be what the American Medical Association demands in its new rules about proprietary preparations. To comply with the new requirements would be to make your products common property. By furnishing the information demanded you would enable pirates to affirm that their spurious imitations were made in accordance with the published formulas of the association.

Refusal to be mandamused out of your property will result in the exclusion of your advertisement from the association's journal. Also it will exclude you from the proposed book of non-official remedies. Very many others will be excluded for the same reason, and the book consequently will be incomplete.

We therefore offer you space in the New York Medical Journal for a brief expression of your views on this important matter, and shall be very glad to hear from you at your earliest convenience.

Very respectfully yours,

A. R. Elliott

President.

(EXHIBIT A.)

reproduce it (Exhibit A)—not because there is any criticism on a journal asking for opinions of manufacturing pharmacists (for we publish above some opinions which the council itself solicited) but because the owners and not the editor ask for the opinions and because of the suggestions made as to the kind of opinions wanted. It is very much to the point that this letter was sent by the owners and not by the editor of a journal that is presumed to be published in the interest of physicians. Just why the editor's function was usurped by the owners of the journal we can not understand, but we can readily appreciate why the advertiser's side of the question was recognized as the more important, when we realize that the owners are primarily advertising agents and publish a medical journal as a side line. As evidence of their status we reproduce the letterhead of the firm (Exhibit B). As a further reason for the *pro tempore* editors siding with the advertisers, it should be known that they also own a drug journal, which at one time was recognized as a high-class pharmaceutical publication. Under the present management, however, it has developed a decided leaning toward patent medicine and the Proprietors' Association, and is not pointed out as an exponent of the highest ideals in pharmacy. Furthermore, the owners, as far as we know, do not claim to be pharmacists, and we never heard that they posed as physicians; consequently when they assume to edit a medical journal they are not to blame if they do not see either the scientific pharmacist's side of the question, or the physician's. Then, again, there is more money in a journal with a small circulation and with a large advertising patronage than the reverse, and in such cases it may pay from a financial standpoint to cater to the advertisers. Therefore, taking it all in all, it can be readily understood why the temporary editors

Advertising is to Business what Steam is to Machinery—The Great Propelling Power.—*Lord Macaulay.*

A. R. Elliott—Advertising

Leading Dailies a Specialty,

RELIGIOUS WEEKLIES, MEDICAL JOURNALS, FASHION PUBLICATIONS, TRADE JOURNALS, ILLUSTRATED PAPERS, AGRICULTURAL JOURNALS, COUNTRY WEEKLIES, JUVENILE PUBLICATIONS, FOREIGN PUBLICATIONS,

Monthly Magazines.

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New York.

(EXHIBIT B.)

temporarily forgot that they were temporarily acting as editors of a journal that, nominally at least, represents physicians and not secret nostrum manufacturers.

There was a time when the *New York Medical Journal* held a high position among medical journals of this country. It stood for the ideal in medicine and for the profession it represented. But that was when it was owned by the Appletons when Dr. Frank P. Foster was editor in fact, and who, as such, would not have advocated in its editorial pages secrecy in medicine.

Suggestive Names for Proprietary Remedies.

It is to be deplored that the manufacturers of legitimate proprietary remedies have so strong a penchant for giving fanciful names to their products. The tendency of many of these is decidedly vicious, in that they smack remarkably of thinly-veiled lay advertising. Others are objectionable only because they are in bad taste. It is certainly an imposition on the medical profession to ask it to prescribe these mixtures under names which would be more suitable for apartment houses. It would be foolish to condemn a product merely for its name, but surely a meritorious product deserves a dignified designation.

Secret Remedies in France.

The law in France with regard to medicinal agents may be summed up as follows: The sale of medicinal compounds or remedies, the ingredients of which are known only to the proprietors, is absolutely prohibited in France. The law requires the inventors or owners of such remedies to communicate the recipe of their preparations to the minister of commerce, with a list of diseases to which they are applicable, and a statement of the actual trials to which the medicines have been submitted. The National Academy of Medicine then examines the composition of the remedies to ascertain if their administration might be dangerous in certain cases; if the remedies are good in themselves; if they have produced and will still produce beneficial effects on humanity. This is to a great extent the same throughout all parts of Europe, except in England, where the laws are in a somewhat degenerate condition; the educational standpoint for pharmacists being much below that of the continent.—*International Therapeutics.*

Association News.

Portland Hotel Reservations.

We again urge the members of the American Medical Association who are thinking of going to Portland to make arrangements for their hotel accommodations as early as possible. The chairman of the Committee of Arrangements announces that the committee will have accommodations for all who attend the session, but that it should know, approximately, the number for which it is to provide. Address the chairman of the Committeee of Arrangements, Dr. Kenneth A. J. Mackenzie, Portland, Ore., or Mr. H. C. Bowers, chairman of the Hotel Committee, Portland, Ore.

A Special Car from Kansas City.

Dr. Charles Wood Fassett desires us to announce that he is arranging for a special car from Kansas City, etc., to Portland for the members of the Missouri Valley Medical Society. Full information can be obtained by writing to Dr. Fassett at St. Joseph, Mo.

Marriages.

WALTER R. COOK, M.D., to Mrs. Minnie Cobb, both of Mount Pisgah, Iowa.

ROBERT W. OAKLEY, M.D., to Miss Grace C. Crawley, both of Moline, Ill., March 6.

JAMES C. HIGGINS, M.D., to Miss Stella M. Hinch, both of Philadelphia, March 7.

JOSEPH J. KANE, M.D., to Miss Anna A. Morris, both of Philadelphia, March 6.

ARTHUR C. YENGLING, M.D., Salem, Ohio, to Mrs. Ina Rank Carey, at McDonald, Pa.

JEFFERSON D. NIFONG, M.D., to Mrs. Susan Belden of Vermont, at San Francisco.

OSCAR R. HEAVRIN, M.D., to Miss Clotylle Bamberger, both of Owensboro, Ky., March 9.

H. D. KNEEDLER, M.D., to Miss Ethel Mason of Missouri, at Manila, P. I., January 11.

FRANK J. GILSON, M.D., to Miss Laura Ballantyne, both of Brackett, Texas, March 7.

JOHN BARTOW CORYELL, M.D., to Miss Nellie Cantwell Fraser, both of St. Louis, March 6.

THOMAS B. MCDONALD, M.D., to Miss Nina Milholland, both of Cumberland, Md., March 4.

JAMES WALKER SMITH, M.D., St. Louis, to Miss Eugenia James of Pine Bluff, Ark., March 11.

CHARLES A. ROOD, M.D., Madison, Wis., to Mrs. Hannah Genevieve Clark of Chicago, March 9.

HENRY ROBERT GLEDHILL, M.D., to Miss Cornelia Wyckoff Newton, both of Jerseyville, Ill., March 3.

A. D. BERRYHILL, M.D., McKenzie, Tenn., to Miss Clara McClure of Weakley County, Tenn., March 5.

HARRY SHRYOCK, M.D., Seattle, to Miss Edna McBride of Espanola, N. M., at Seattle, Wash., February 28.

JOHN M. GULICK, M.D., Manteno, Ill., to Miss Zella M. Irwin of Peterborough, Ont., at Manteno, March 9.

HENRY Z. EWING, M.D., Barnes, Kan., to Miss Margaret Burgess of Westmoreland, Kan., at Marysville, Kan., January 4.

Deaths.

Albert B. Craig, M.D. Jefferson Medical College, Philadelphia, 1901; honorman of his class; resident physician for a year in Jefferson Medical College Hospital, and later assistant to Dr. William W. Keen, assistant demonstrator of anatomy in Jefferson Medical College and assistant visiting surgeon to Jefferson Medical College Hospital, a collaborator and sub-editor of *American Medicine* since its inception, died at his home in Philadelphia, March 14, aged 38, after an illness of only ten hours, from cerebrospinal meningitis contracted from a patient.

George Frederick Keene, M.D. Harvard University Medical School, Boston, 1879, a member of the American Medical Association; superintendent of the State Hospital for the Insane, Cranston, R. I.; a member, and once president of the Rhode Island Medical Society; member of the American Academy of Medicine, American Medico-Psychological Society, New York Medicolegal Society, Rhode Island Clinical Society, Providence Medical Association, Rhode Island Medicolegal Society, etc., one of the leading alienists of the east, died at his home in Howard, R. I., March 13, from pneumonia complicated with nephritis, after an illness of only five days, aged 51.

William M. McPheeters, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1840, the oldest alumnus of that institution; the oldest practitioner of St. Louis; at times a member of the faculty of the Missouri and St. Louis Medical College in 1845; editor of the *St. Louis Medical and Surgical Journal*; the oldest member of the St. Louis Medical Society; division surgeon in the Confederate service during the Civil War, died from pneumonia at his home in St. Louis, March 15, after an illness of one week, aged 89.

Horace Wardner, M.D. Rush Medical College, Chicago, 1856, formerly superintendent of the Illinois Southern Hospital for the Insane, Anna, member of the American Medical Association, president of the Southern Illinois Medical Society, and president of the Illinois State Board of Health; a surgeon in the Army throughout the Civil War; member of the Indiana State Medical Society, died at his home in Laporte, Ind., from septicemia, March 17, after a long illness, aged 75.

Charles Hamilton Losey, M.D. New York University, New York City, 1889, a member of the Monroe County Medical Society and Central New York Medical Society, and a member of the board of managers of the State Industrial School, died at his home in Rochester, N. Y., March 13, after a prolonged illness, aged 41.

Milton Marion Fenner, M.D. Cincinnati, 1860, assistant surgeon in the Navy during the Civil War, representative in the State Assembly in 1879-1880, and deputy collector of the port of New York during the Harrison administration, died at his home in Fredonia, N. Y., March 14, after a long illness, aged 67.

John M. Clark, M.D. University of Louisville (Ky.) Medical Department, 1850, twice a member of the state legislature; some-time president of the Medical Association of the State of Louisiana, died suddenly, Dec. 23, 1904, at his home in Russellville, Ala., from heart disease, aged 77.

William S. Hall, M.D. New York University, New York City, 1885, of Rochester, N. Y., a member of the Monroe County Medical Society and the Rochester Pathological Society, died at the Rochester City Hospital, March 8, a few hours after an operation for septic peritonitis, aged 44.

James Alexander Ferguson, M.D. Bellevue Hospital Medical College, New York City, 1881, a member of the American Medical Association, surgeon to Fordham Hospital, died at his home in Highbridge, New York City, March 7, from kidney disease of long standing, aged 45.

Lemuel Foley, M.D. Willamette University Medical Department, Salem, Ore., 1870, twice mayor of Lebanon, Ore., and for many years a member of the city council, died at his home in that city from an attack of influenza, March 7, after a brief illness, aged 63.

James A. Moore, M.D. Yale University Medical Department, New Haven, Conn., 1894, police surgeon of New Haven, died at his home in that city, March 9, from cerebrospinal meningitis contracted from a patient, after an illness of three days, aged 38.

George W. Edison, M.D. London University, 1842, during the Civil War city physician of Quincy, Ill., and surgeon on hospital boats on the Mississippi, died from cerebral hemorrhage in the hospital of the Soldiers' Home, Quincy, March 10, aged 78.

Felix C. W. Printz, M.D. Medical Department of Washington University, St. Louis, 1898, chief of the laryngologic and rhinologic clinic at the O'Fallon Dispensary, St. Louis, died at his home in St. Louis, March 9, after a short illness, aged 28.

Edward William Burk, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1890, of Moberly, Mo., a member of the common council, died suddenly from heart disease of long standing at his old home in Keokuk, March 14, aged 39.

Lewis Henry Viallon, M.D. Tulane University of Louisiana Medical Department, New Orleans, 1890, coroner of Iberville Parish, La., of Bayou Goula, died at the home of his brother in Whitecastel, March 14, from consumption.

James Clinton Comstock, M.D. College of Physicians and Surgeons in the City of New York, 1884, died at his home in Binghamton, N. Y., from cerebral hemorrhage, after an invalidism of six years, March 8, aged 46.

Louis August Hering, M.D. College of Physicians and Surgeons, Baltimore, 1897, of Cheyenne, Wyo., died at the home of his father in Vailsburg, N. J., February 24, from tuberculosis, after a long illness, aged 34.

E. Julius Boeber, M.D. Kansas City (Mo.) Medical College, 1898, formerly assistant city physician of Kansas City, died at Guadalajara, Mexico, March 12, from tuberculosis, after an illness of six years, aged 34.

Hubbard Ellis, M.D. Medical College of Ohio, 1904, senior interne at the Good Samaritan Hospital, Cincinnati, died in that institution, March 11, three days after an operation for appendicitis, aged 27.

John H. Fleetwood, M.D. Tulane University of Louisiana Medical Department, New Orleans, 1872, died at his home in Thibodaux, La., March 7, from pneumonia, after an illness of a week, aged 75.

A. Blair Frazee, M.D. College of Medicine, Syracuse (N. Y.) University, 1882, of Rochester, N. Y., died at a hospital in that city, March 11, from pneumonia, after an illness of ten days, aged 45.

Albert W. Scofield, M.D. University of Buffalo (N. Y.) Medical Department, 1883, died suddenly at his home in Cincinnati from cerebral hemorrhage, after an illness of two days, March 14, aged 42.

Warren Hippee, M.D. Medical Department of the University of Iowa at Keokuk, 1867, of Des Moines, Iowa, died at Salt Lake City, Utah, March 9, while on his way to California, aged 69.

Carlos Van Julius Doolittle, M.D. College of Medicine, Syracuse (N. Y.) University, 1891, of Utica, N. Y., died at his former home in Paris Hill, N. Y., March 9, after a long illness, aged 38.

James A. Kelly, M.D. McGill University Medical Department, Montreal, 1887, died at his boarding house in South Omaha, Neb., March 12, from hemorrhage, after a short illness, aged 37.

Edwin Jenkins Howe, M.D. College of Physicians and Surgeons in the City of New York, 1873, died suddenly at his home in Newark, N. J., March 14, from cerebral hemorrhage, aged 55.

John Andrew Brosnahan, M.D. New York University, New York City, 1851, died at his home in Pensacola, Fla., January 10, from nephritis, after an illness of 11 months, aged 74.

William C. Weymouth, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1880, of Renovo, Pa., died in Lock Haven (Pa.) Hospital, March 14, aged 51.

Hugh Russell, M.D. Rush Medical College, Chicago, 1855, a pioneer physician of Superior, Wis., died suddenly at his home in that city from heart disease, March 8, aged 78.

Robert J. McAdams, M.D. Louisville, (Ky.) Medical College, 1894, of San Diego, Cal., died at Pasadena, Cal., March 12, from rheumatism, after a prolonged illness, aged 34.

Edward P. Gilpin, M.D. Medical College of Indiana, Indianapolis, 1876, was found dead in bed in his apartment in Oberlin, Kan., March 6, from cerebral hemorrhage, aged 56.

William T. Dunlap, M.D. Cincinnati College of Medicine and Surgery, 1868, died at his home in Cincinnati, March 9, from nephritis, after an illness of two months, aged 60.

Allen Fowler, M.D. Medical Department of the University of Tennessee, Nashville, 1891, died at his home in Union City, Tenn., March 11, after an illness of a few days.

Julian Ridgly Simms, M.D. Missouri Medical College, St. Louis, 1875, of Racine, Wis., died suddenly from heart disease at Magnolia Springs, Ala., March 13, aged 56.

William J. DeVoe, M.D. College of Physicians and Surgeons, Baltimore, Md., 1887, died at his home in Camptown, Pa., March 7, from heart disease, aged about 50.

Leonard Case, M.D. Medical Department University of Tennessee, Nashville, 1893, died at his home in Chattanooga, Tenn., March 12, after a long illness, aged 47.

Charles E. Ellis, M.D. Medical College of Ohio, Cincinnati, 1889, died at the home of his aunt in Covington, Ky., March 2, after an illness of one week, aged 39.

Adam M. Mohney, M.D. College of Physicians and Surgeons, Baltimore, 1890, died at his home in Rimersburg, Pa., March 11, after a prolonged illness, aged 54.

Perrin H. Aldrich, M.D. Cleveland Medical College, 1871, died at his home in Defiance, Ohio, March 7, from nephritis, after a long illness, aged 67.

George W. Connell, M.D. Medical Department of the University of Missouri, St. Louis, 1851, died at his home in Centralia, Mo., March 11, aged 79.

Joseph Schmitz, M.D. University of Würzburg, Germany, 1878, of New York City, died in St. Joseph's Hospital in that city, March 8, aged 53.

Caspar L. Nauman, M.D. Medical College of Ohio, Cincinnati, 1876, died at his home in West Branch, Mich., March 3, from sclerosis of the liver.

William F. Bland, M.D. Jefferson Medical College, Philadelphia, 1849, died suddenly at his home near Verona, Md., Dec. 25, 1904, aged 77.

Willis G. Pope, M.D. New York, 1870, of Keeseville, N. Y., died in the Albany Hospital, February 27, after an illness of several months.

David L. Ross, M.D. Rush Medical College, Chicago, 1872, died suddenly at his home in Pittston, Pa., March 8, from heart disease, aged 59.

Stanton E. Miller, M.D. Northwestern University Medical School, Chicago, 1887, died at his home in Florida, Ohio, March 5, aged 43.

Egbert J. Vail, M.D. New York City, 1854, died at his home in South Manchester, Conn., March 13, from heart disease, aged 83.

Niven Agnew, M.D. Medical Department of Victoria College, Toronto, 1858, died at Brandon, Manitoba, March 1, from pneumonia.

Robert O. Calvin, M.D. Cleveland Medical College, 1879, died, March 7, from paralysis, at his home in Meadville, Pa., aged 54.

William Meyer, M.D. Rush Medical College, Chicago, 1879, died at his home in Milwaukee, March 15, aged 49.

John W. Kirtland, M.D. Illinois, 1886, died at his home in Lakeview, Mich., March 13, aged about 66.

Book Notices.

A LABORATORY MANUAL OF HUMAN ANATOMY. By Lewellys F. Barker, M.B. Tor., Professor and Head of the Department of Anatomy in the University of Chicago and Rush Medical College. Assisted by Dean De Witt Lewis, A.B., M.D., and Daniel Graisberry Revell, A.B., M.B., Instructor in Anatomy in the University of Chicago. Illustrated. Pp. 583. Price, $5.00. Philadelphia and London: J. B. Lippincott Co. 1904.

This is distinctly a laboratory or dissecting-room manual and not a descriptive anatomy. It teaches how to dissect the human body in order successively and properly to expose the different parts to the best advantage. The various regions of the body are taken up in order, and the points of each are cleary indicated. This is not always done by describing the particular points or features of the part, but cleverly arranged interrogations which direct the student's attention to the part and compels him to exercise his own powers of observation with the result of fixing the facts more firmly in his mind. It is a most excellent method of teaching anatomy in the dissecting room. The illustrations have been selected with care and good judgment from standard atlases and anatomies. Many of them are in colors more clearly to differentiate the tissues.

The adoption of the modern nomenclature as formulated by the German Society of Anatomists is a distinct improvement on the older works. The volume is neatly gotten up, not too large for convenient handling, and, on the whole, it is the best and most modern dissecting-room manual with which we are acquainted.

THE OTHER SIDE OF THE LANTERN. By Sir Frederick Treves, Bart., K.C.V.O., C.B., LL.D., Sergeant-Surgeon in Ordinary to H. M. the King. With 40 Illustrations from Photographs, by the Author. Cloth. Price, $5.00 net. Chicago: W. T. Keener & Co. 1905.

Sir Frederick Treves went around the world with his eyes open. He saw more than most men, and has written about what he saw in such a way that the reader sees it, almost. India, Burmah and Ceylon, China and Japan are the countries visited—at least, practically the whole of the book is taken up with these countries. The author came back through the United States, but all he has to say about this country is contained in a half dozen pages. There is a short description of the Yosemite Valley and of the Grand Canon of Arizona, and then there is a jump to Yarmouth, England. The book is written in a strictly popular style; there is scarcely a word to indicate that the writer is a surgeon, although he comments on the Japanese surgeon and on the Japanese Red Cross Society. Of the former he says: "The Japanese surgeon is no longer a servile imitator. He is introducing into his methods the results of his own ingenuity. Many features which in Europe are of the latest suggestion have already been anticipated in Japan. There is every probability that the Japanese school of surgery will become a great school, for the native of Japan has qualities which are excellent in the making of a surgeon; he is not troubled by 'nerves,' he is infinitely patient, fastidiously clean, as well as most neat and dexterous with his hands." The author's style is crisp, occasionally poetical and always interesting.

Miscellany

ISTHMIAN SANITATION.

Newspaper Comment on the Isthmian Canal Commission and Its Methods of Sanitation.

We quote the following from the Boston *Advertiser*, March 15, 1905:

"President Roosevelt is hearing pretty sharply from a good many old and influential friends of his, here in Boston and elsewhere, we find, about the Panama commission. The President has been told that for crass stupidity some of his appointees can not be beaten. The engineers have had some pretty sharp things to say. But the physicians all over the country are the most angry. They have heard from some of the peculiar decisions of the Panama commission; and they agree pretty unanimously that for stupidity on health matters the commission can not be beaten. If the President does not interfere, they agree, the Panama canal will be a disgrace to the United States. And they have plenty of reason for saying so, as they have the proofs in black and white. The records of the canal commission prove everything that needs to be proved, in these charges.

"We do not agree with the physicians when they charge President Roosevelt with bad faith. Theodore Roosevelt is not that kind of a man. Either he misunderstood them or they misunderstood him. They say that when they went to him with practically every possible indorsement of Colonel Gorgas for a place on the commission, he explained that for political reason Gorgas could not have the place, as he was only an army officer and had no political backing. But, they insist, President Roosevelt assured them that Gorgas should have absolute power on the isthmus, on all matters pertaining to the health of the canal workers or the inhabitants of the canal strip. That satisfied them. They did not profess to know much about politics. It might be impossible, as the President said, to put a physician on the Panama commission; and so long as Gorgas could have the power to see that the canal strip was kept free from yellow fever and other pestilences, they felt agreeable to letting Gorgas do his work, in any way that suited the present.

"But the trouble is now that the agreement, if there was any such, has never been kept. Gorgas has had his orders countermanded by the ridiculous commissioners. Even his orders for comparatively inexpensive things, necessary to his work, have been cut down by Grunsky and the others. Of course the most necessary thing on a place like the isthmus, to stop the spread of enteric fevers, is to keep the workmen from the mosquitoes, which spread the diseases. Yet Gorgas' order for mosquito netting, not a very costly article, was cut down by Grunsky to about 20 per cent., according to one statement. And the same story is told as to the other orders given by

Gorgas. The engineers, who feel that a bill for $1,000,000 is little enough for a single plant of excavating machinery, have been horrified at a total of something like $25,000 for protecting a large area from an epidemic that might easily carry off 100 or 200, or even 500 laborers from a camp. The medical critics of the President say that such an idiotic policy will delay the canal work, make it cost more, and give the work such a bad name that it may be almost impossible (as in the case of the French Panama canal) to get workmen except at almost prohibitive wages.

"The matter strikes the American medical men all the more harshly, because they have just seen, in Asia, Oyama's great army massed together weeks and months, without any such epidemics as have been feared on the Isthmus of Panama. The Japanese give the medical director of the army absolute power over the health conditions. The field marshal says what position the troops must hold, but the medical director says from what source the water supply must be had, when and where the men may bathe, how their food shall be cooked, how they shall sleep at night and live by day. Never before in any army has an expert had such powers, as contrasted with those of the commander-in-chief. The result speaks for itself. The whole civilized world has been astounded by the success of the Japanese in saving their men. That is one of the reasons why Oyama is beating Kuropatkin. Healthy men can do better work than sick men. The Panama canal commissioners do not realize the importance of that fact. It is to be hoped that the President will."

Anesthesia in Examination of Severe Injuries.—Whenever possible, resort to anesthesia for the inspection and dressing of severe injuries. It allows the surgeon to take more time, as he is not afraid of hurting the patient, hence he can make a more thorough examination and apply a more efficient dressing. The elimination of pain will also do much toward preventing shock.—*International Journal of Surgery.*

A Happy Compromise.—J. T. Trowbridge, in the *Atlantic Monthly*, tells an anecdote of Oliver Wendell Holmes, typical of his keen wit. When the friends of the rival claimants of the discovery of anesthesia were proposing monuments for each, Holmes suggested the erection of a single memorial, with a central group symbolizing painless surgery, a statue of Jackson on one side, a statue of Morton on the other, and the inscription underneath: "To E(i)ther."

Protector Against Electric Accidents.—A foreign exchange mentions that Professor Artenieff of Kiev, Russia, has invented a protector against industrial electric accidents which is said to answer its purpose well. It consists in a fine wire netting case to cover the entire body, including the head. It does not interfere with the movements of the person wearing it, but conducts away all the electric discharges. With this suit on, he is said to have endured a current of 150,000 volts without experiencing the slightest shock or injury.

Books and Physicians.—The largest part of a physician's equipment is his books. Physicians usually keep more closely up with the procession, from the viewpoint of books, than lawyers. The physicians have to do it, because much of their reputation among their associates depends on the accuracy and the modern finish of their knowledge. A lawyer can more easily dispense with new law books than can a physician with the late medical books. An up-to-date physician has a much more expensive library, as a rule, than a minister, and it is almost as expensive as a lawyer's, the difference being that a lawyer's whole equipment is books, while a physician must have a laboratory and a full complement of instruments.—*Louisville Courier-Journal.*

One Way to Give Oils.—We have more than once, we believe, given the following prescription. The extent to which it is being quoted indicates its popularity and we repeat it. We desire to hear from those who have tried it as to its success: Castor-oil can be given in frothing beer with great facility. It is, however, not always easy nor advisable to give beer, therefore a frothing mixture which serves the same purpose may be used instead. It is in the form of a powder, composed of gum arabic, licorice, and lactose flavored with vanilla. A pinch of this powder, shaken with a little water, produces a very persistent froth, in which any oily substance, as cod-liver oil, castor-oil, iodized or phosphorated oil, and medicines lighter than the mixture, such as the silicate of methyl, essence of santal, etc., can be given without the slightest unpleasant taste.

Height and Weight.—The statistics as to the height and weight of school children, which have now been kept for twenty years in some of the most progressive schools, are of considerable value, especially as affording a basis for comparison and for establishing an average standard of healthy increase in height and weight. In Marlborough such statistics have been kept since 1874, and the statistics show that a boy of 13 weighs on an average 5½ pounds more and is 2 inches taller now than the average boy of 13 in 1874. Not so much difference is shown between the average at the age of 18 then and now. To-day an 18-year-old boy is 4½ pounds heavier and 9/10 of an inch taller. The Rugby statistics, which have been kept since 1879, show that the 13-year-old boy is now 6 pounds heavier and 2½ inches taller than in 1879. But the 17-year-old boy shows in the same period an increase of 9/10 of an inch in height, and a diminution of 1 pound in weight.—*Canadian Journal of Medicine and Surgery.*

Early American Medical Journals.—The first medical journal published in the United States, states the *Medical Book News*, was the *New York Repository*, which was continued from 1796 to 1822. The first medical journal begun in Philadelphia, which city may be called the birthplace of medicine of the early republic, was the *Medical and Physical Journal*, edited by Dr. B. S. Barton, in 1804. It was continued for five years, and made three volumes. Dr. John Redman Coxe originated and edited the *Medical Museum*, in 1805. The next journal was the *Eclectic Repertory and Analytical Review*, published by a medical society. Dr. Chapman of Philadelphia originated the *Medical and Physical Journal, the Second*, in 1820. It was continued under this title until 1827, in which year the title of the periodical was changed to that of the *American Journal of the Medical Sciences*. This journal was placed under the charge of Dr. Isaac Hays, who guided it constantly and judiciously until he placed the journal in the front rank of American medical literature.

"The Damaged."—The French term "avarié," used to refer to goods damaged in transit, was appropriated by a French playwright, Brieux, to denote persons with a taint of syphilis. He wrote a play with the title of "Les Avariés," which portrayed the dangers of syphilis and its social consequences. The play was widely heralded, but the censor prohibited its publication. This advertised it still further, until the term "avarié" is now firmly settled in the French language. The censor has recently removed his ban, and the play is being given in Paris. The Paris medical journals regard it as something of an event, as the play is conceived in a strictly scientific spirit without exaggeration. It reaches a wider public than the lectures of the syphilidologists, and is liable to make the heedless pause and reflect. The word syphilis is not mentioned in the play, but the announcement is made from the stage beforehand that "les avariés" refers to syphilis. The physician in the play is the principal character. The plot hinges on his professional knowledge of the syphilitic taint in certain of the other characters.

Influence of the Physician on the Nation.—The physician can in no possible way serve the nation better than by teaching the mothers of the nation how to rear the children of the nation. It is the physician who comes in deliberate contact with the daily family life and who speaks and they believe. The physician is the physical guardian of the rising generation, and determines in a great measure the character of the spiritual, commercial and political life of the nation; in fact, he aids the people of the nation to receive what they have a right to demand. As a result of his having lived and lived nobly,

there will be happier homes, fewer disappointed lives and less crime; in such a capacity, and from a standpoint of national work, the physician is the most important member of the community in which he resides. A more valuable man to the state or nation than a man in any other calling, who prepares the soil, and without sound bodies and normal minds, sacred and religious teachings are of little avail. Where the nation shall stand twenty-five or fifty years hence, and what position it shall occupy among the nations of the earth, depend more on the physicians of to-day than on any other calling whatever.—*Charles Gilmore Kerley.*

The Use of Proprietaries.—In the *Medico-Chirurgical Journal* for February Dr. O. Luther Latchford advises physicians to confine themselves to official drugs and to study the U. S. Pharmacopeia and the National Formulary rather than the literature sent out by proprietary medicine firms. He points out that the successful men in the profession adhere strictly to the drugs and preparations in the pharmacopeia and in the National Formulary. He states that chemical analysis of many preparations with euphonious names shows that they often consist of the most common and inert drugs and chemicals. Dr. Latchford considers that the prescribing of proprietaries leads to counter prescribing by the druggist and to self-medication by the patient. He emphasizes the well-known fact that the patient quickly learns to read prescriptions and then applies his knowledge by buying the preparations himself without consulting the physician. Dr. Latchford points out that a patient will not only prescribe for himself in this way, but for all his friends, and thus the physician suffers. The author states that in using proprietary medicines there is danger of neglecting conditions which are not apparent from a superficial examination and calls attention to the impossibility of applying a ready-made formula to every case. He states that while acute poisoning is guarded against, in most proprietary preparations, a cumulative action often results in chronic poisoning. He advises physicians to "hold fast to that which is good," viz., the U. S. Pharmacopeia, and states that no physician can go astray if he adopts it as a guide to all that is old or new in medicine.

Changes in Medical Journals.—Dr. J. MacDonald, New York City, late managing editor of the *International Journal of Surgery*, has resigned his position with that publication after being connected with it for fourteen years, and will establish an independent journal "under absolute professional control" to be called the *American Journal of Surgery*. He has purchased *American Surgery and Gynecology*, formerly issued in St. Louis by Dr. Emory Lanphear, and will merge it into the new publication. Dr. Lanphear is retiring from journalism after nearly twenty-five years' work in that field.—— The *Canadian Medical Record*, for many years conducted by Dr. F. W. Campbell, dean of the medical faculty of Bishop's College University, has ceased publication and has become incorporated with the *Montreal Medical Journal*.—— A new publication which has come to our desk is the *Hospital Bulletin* of the University of Maryland, edited by a committee of the hospital staff. The first number contains several original articles with illustrations; there are also some editorials and a number of abstracts and news items. It is announced that the bulletin will be devoted to the publication of hospital material and to advancing the interests of the university and its alumni in all possible ways.

The Study of the History of Medicine.—In a presidential address delivered before the Medical and Chirurgical Faculty of the State of Maryland on its 105th anniversary, Dr. Eugene F. Cordell lamented the meagerness of the teaching of this subject in the medical departments of American universities, says the *Medical Book News*. He had written for information to 14 of these and had learned that in only 3—namely, the Universities of Pennsylvania, Maryland, and Minnesota—was there a full course of lectures on the history of medicine. Johns Hopkins Hospital, however, has a historical club which does excellent work in furthering the study of medical history by assembling for the reading of papers. Harvard University attempted a course of lectures but "no interest was shown" and the course was abandoned. The only course of lectures in Great Britain is that recently founded by the widow of the late Dr. FitzPatrick at the Royal College of Physicians of London, two courses of which have been already delivered by Dr. J. F. Payne. Dr. Cordell proceeded in his address to show that a study of medical history teaches us what and how to investigate; that it is an antidote for error, egotism, and despondency; that it increases knowledge, broadens the view and strengthens the judgment; that it is a mine from which many neglected or overlooked discoveries may be brought to light, and that it teaches us to cherish our best traditions.

The Way to Sponge a Fever Patient.—We quote a prize-winning description of how to administer a sponge bath which appeared in the *Hospital*: When about to commence to sponge a fever patient the exact temperature of the body must first be noted. For tepid sponging the water prepared should be from 80 to 90 degrees F. Remove all personal clothing from patient and place blankets both under and over him. Place beside the bed all basins, sponges and towels, or anything that may be required, as under no circumstances should a patient be left during the operation. Commence at the head and sponge downward, exposing only one limb at a time. When the whole body has been sponged the patient should be wrapped in a warm blanket and left undisturbed for an hour or even longer. The temperature may then be taken again to ascertain how much it has been reduced. The same precautions should be used in cold sponging as in tepid. It will, however, be found advisable to sponge each limb over with tepid water before applying the cold, as it will then cause less shock to the patient. It is wise to keep a hot bottle at the patient's feet during sponging, as with the feet warm there is less fear of chill, and in the case of a fever patient there is always more or less danger of collapse. When the temperature has been reduced the body must be gently dried and a flannel night-gown put on. After a cold sponge the temperature may fall from 1 to 6 degrees, the colder the water the sooner the reaction takes place. Ammonia, cologne water or vinegar added to the water makes it more cooling by its rapid evaporation. Sponging can also be done by wringing towels out of cold water, dry enough not to drip, and placing them one after another from the neck downward. When the feet are reached, begin again at the head and renew each in succession, continuing as long as necessary.

Fango Treatment.—The application of hot volcanic mud, or fango as the Italians call it, for the relief of gout, rheumatism, sciatica and similar painful ailments, is discussed by Sharpe in the *Journal of Balneology and Climatology* for January, 1905. In appearance fango is a soft, grayish brown, plastic substance of about the consisteney of butter, and equally soft to the touch. It is without odor, and after application is quickly and completely removed from the skin by means of a douche of warm water, leaving the surface absolutely clean. In order to bring the fango to a proper temperature for application to the body, it is heated in a large water or steam-jacketed pan. The heating takes place slowly, but the cooling is equally slow, and once a large mass of fango is raised to the right temperature, it takes hours to cool. The application is practically a huge sterilized mineral poultice enveloping the part affected. In numerous instances it has produced such rapid and marked effects when all other heat applications have been tried and found wanting, that Sharpe is using a large amount of this stuff in the treatment of stiff and painful joints, from whatever cause. Of 70 cases treated only 4 failed to get some measure of relief. In 30 chronic cases of from some months to many years' standing, the relief was substantial, and in 36 recent rheumatic, gouty and traumatic cases the trouble was entirely removed. The physiologic effects of fango are: 1. Stimulation of cutaneous reflexes with dilatation of superficial capillaries. 2. Increased activity in the normal process of absorption of morbid deposits and repair of damaged tissues. 3. Marked systemic effect, the entire skin

surface perspiring freely, thus insuring increased excretion and elimination. 4. Slight increase of the body temperature rarely exceeding two degrees, subsiding rapidly after removal of the pack, and probably due to direct heating of the blood.

Queries and Minor Notes.

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish his name will be faithfully observed.

REMOVAL OF TATTOO MARKS.

GLOSTER, MISS., March 15, 1905.

To the Editor:—I have a patient who has been "tattooed" with India ink or some other stain and now wishes to have it removed; will you kindly suggest some harmless method whereby I can remove the objectionable stain? H. U. STREET, M.D.

ANSWER.—There is no entirely satisfactory method of removing tattoo marks and other marks due to the deposit of insoluble color substances in the skin. The principle of almost all of the methods for removing these marks is to cause their destruction either by mechanical means or by the production of an inflammatory process which causes a superficial eschar. Small marks can be removed by excision or by electrolysis. In removing them by electrolysis, the needle attached to the negative pole is inserted parallel to the surface of the skin into the mark and a current of from 5 to 8 milliamperes (5 to 10 small bichromate cells) is passed through the needle. Several such punctures are made parallel to each other until the surface is blanched. Usually it is not necessary to allow the current to pass for more than 20 to 30 seconds for each puncture. In this way, a superficial eschar is formed which will drop off in the course of a week and will leave a white superficial scar. Of course, neither this method nor excision is satisfactory for large marks. For all but the smallest marks the method of treatment is to produce a violent inflammatory reaction and a superficial eschar by the use of a chemical. Various methods of doing this have been suggested. Perhaps the best of these is Variot's, which is as follows: First place on the tattoo mark a strong solution of tannin and tattoo this into the surface. Then the surface is rubbed vigorously with a nitrate of silver stick until the area becomes black from the formation of a silver tannate in and on the skin. In the course of the next two or three days there is a moderate inflammatory process and a close adherent crust forms. Ordinarily there is not much pain and after the third or fourth day this almost disappears, except on motion of the parts, unless secondary infection should occur. After about two weeks the crust comes away, leaving a superficial, pink cicatrix, which gradually becomes of normal color. After about two months the scar is hardly noticeable. It may be necessary to repeat the treatment when it has not been vigorous enough.

OWNERSHIP OF NURSE'S RECORD.

WHITE EARTH, N. D., March 15, 1905.

To the Editor:—In a case of typhoid fever in my private practice where a trained nurse was employed, a record of the case was kept by the nurse at my orders. To whom does this record belong, according to law or usage, or both? Patient's mother refuses to remit fee until record is given to him, she claiming it on the ground that the nurse was in his employ and that the product of her labor belongs to him. Record is either lost or destroyed.

A. A. W.

ANSWER.—A nurse is presumed to perform her duties under the direction of the physician. A record is made for the physician, on blanks often furnished by him, and naturally belongs to him. It must be remembered, however, that sometimes the nurse is employed directly by the patient, and as such an employe the nurse might be instructed to make a record, and in that case such record would belong to the patient.

BOOK ON HYGIENE FOR THE LAITY.

ELLOREE, S. C., March 6, 1905.

To the Editor:—Please advise me as to a book on hygiene that would be suited for a private family; one as free as possible from technicalities would be best. SOPHIA BRUNSON, M.D.

ANSWER.—An excellent book for your need is "A Manual of Personal Hygiene," by Walter Pyle of Philadelphia, published by W. B. Saunders & Co., Philadelphia. This is simple, yet complete; it has recently been thoroughly revised and includes home treatment by the use of water, massage, exercise, etc. Its advice is safe and the physician will find it in the hands of patients to be a help toward intelligent co-operation.

RELATIONS OF GRADUATES OF AMALGAMATED SCHOOLS.

CAMBRIDGE, MASS., March 18, 1905.

To the Editor:—When one medical school is amalgamated with another, what is the status of a graduate of the school that is absorbed? J.

ANSWER.—The change will not alter his status in the profession. He is still an alumnus of the old institution and is also an adopted son of the new school.

State Boards of Registration.

COMING EXAMINATIONS.

Maine Board of Medical Registration, City Building, Portland, March 28. Secretary, Wm. J. Maybury, M.D., Saco.

Idaho State Board of Medical Examiners, Boise, April 3. Secretary, Robert L. Nourse, M.D., Hailey.

Utah State Board of Medical Examiners, Salt Lake City, April 3. Secretary, R. W. Fisher, M.D., Salt Lake City.

Central District Board of Medical Examiners for the Indian Territory, South McAlester, April 3, 1905. Secretary, B. W. Caldwell, M.D., Hugo.

Board of Medical Examiners of Arizona, Phoenix, April 3-4. Secretary, Ancil Martin, M.D., Phoenix.

Missouri State Board of Health, University Medical College, Kansas City, April 3-5. Secretary, Winn F. Morrow, M.D., Kansas City.

Board of Medical Examiners of Montana, Helena, April 4. Secretary, Wm. C. Riddell, M.D., Helena.

Board of Medical Examiners of the State of California, San Francisco, April 4. Secretary, Charles L. Tisdale, M.D., San Francisco.

Regular Board of Medical Examiners of Georgia, Atlanta, April 4. Secretary, F. D. Patterson, M.D., Cuthbert.

State Board of Medical Examiners of Tennessee, Nashville, Memphis and Knoxville, April 4-5. Secretary, T. J. Happel, Trenton.

Minnesota State Board of Medical Examiners, the Old State Capitol Bldg., St. Paul, April 4-6. Secretary, C. J. Ringnell, M.D., Minneapolis.

Rhode Island State Board of Health, State House, Providence, April 6-7. Secretary, Gardner T. Swarts, M.D., State House, Providence.

State Medical Board of the Arkansas Medical Society, Little Rock, April 11. Secretary, J. P. Runyan, M.D., Little Rock.

State Board of Health of West Virginia, Parkersburg, April 11-13. Secretary, H. A. Barbee, M.D., Point Pleasant.

Board of Medical Examiners of Oregon, Portland, April 11-13. Secretary, Byron E. Miller, M.D., The Dekum, Portland.

Illinois State Board of Health, Great Northern Hotel, Chicago, April 12. Secretary, J. A. Egan, M.D., Springfield.

Board of Medical Supervisors of the District of Columbia, Washington, April 13. Secretary, Wm. C. Woodward, M.D., Washington.

Kansas State Board of Medical Registration and Examination, Kansas City, April 25-26. Secretary, G. F. Johnston, M.D., Lakin.

Vermont February Report.—The report of the Vermont State Board of Medical Registration, held February 7-9, published in THE JOURNAL, March 11, should read:

College.	Year Grad.	Per Cent.
PASSED.		
University of Vermont	(1904)	75
FAILED.		
Laval University	(1904)	63

The Public Service.

Army Changes.

Memorandum of changes of station and duties of medical officers, U. S. Army, week ending March 18, 1905:

Wilson, William H., asst.-surgeon, granted four months' leave of absence, with permission to go beyond the sea.

DeLoffre, Samuel M., asst.-surgeon, reports change of status from duty, to go on leave of absence for thirty days.

Snyder, Henry D., surgeon, ordered to proceed from Fort Sam Houston, Texas, to Governor's Island, N. Y., as witness before retiring board.

Reilly, John J., asst.-surgeon, granted six months' sick leave of absence.

Pierson, R. H., asst.-surgeon, left General Hospital, Fort Bayard, N. M., on forty days' leave of absence.

Bourke, James, asst.-surgeon, reported for temporary duty at Medical Supply Depot, New York City.

Porter, R. S., asst.-surgeon, leave of absence extended ten days.

Bartlett, C. J., asst.-surgeon, left Army and Navy General Hospital, Hot Springs, Ark., on ten days' leave of absence.

Shellenberger, James E., contract surgeon, ordered from temporary duty at Jackson Barracks, La., to his proper station, Fort Sam Houston, Texas.

Halliday, Francis A., contract surgeon, ordered from Fort McPherson, Ga., to Fort Caswell, N. C., for duty.

Lemmon, Robert, contract surgeon, ordered from Fort Wadsworth, N. Y., to temporary duty at Fort Schuyler, N. Y., and on its completion, to return to his proper station, Fort McKinley, Me.

Tenney, Elmer S., contract surgeon, ordered from Allston, Mass., to duty at Fort Strong, Mass.
Marvin, Marion F., contract surgeon, arrived at Fort Robinson, Neb., for duty.
Rebert, Michael A., contract surgeon, left Fort Totten, N. Y., on leave of absence for ten days.
Dougherty, James C., contract surgeon, left Fort Slocum, N. Y., with recruits for Columbus Barracks, Ohio.
Dickenson, Clarence F., contract surgeon, relieved from further duty in the Philippine Division, and ordered to Fort Logan, Colo., for duty.

Navy Changes.

Changes in the medical corps, U. S. Navy, for the week ending March 18, 1905:

Anderson, F., medical inspector, detached from the *Brooklyn* and ordered home to wait orders.
Norton, O. D., surgeon, ordered to the *Olympia*.
Steele, J. M., surgeon, detached from the *Olympia* and ordered to the *Brooklyn*.
Backus, J. W., asst.-surgeon, detached from the Naval Hospital, Portsmouth, N. H., and ordered to continue duties on the *Southery*.
Foster, T. G., asst.-surgeon, ordered to the Naval Hospital, Norfolk, Va.
Bishop, L. W., asst.-surgeon, detached from the Navy Yard, New York, N. Y., and ordered to the Naval Hospital, Portsmouth, N. H., with additional duties on the *Southery*.
Schwerin, L. H., asst.-surgeon, ordered to the *Hancock*.
Furlong, F. M., P. A. surgeon, detached from the *New York*, when placed out of commission, and ordered home to wait orders.
Smith, G. T., surgeon, detached from the Naval Hospital, Norfolk, Va., and directed to wait orders.
Rothganger, G., surgeon, ordered to the Naval Hospital, Norfolk, Va.
Nash, F. S., surgeon, appointed surgeon from Feb. 23, 1905.

Public Health and Marine-Hospital Service.

List of the changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ending March 15, 1905:

Stoner, G. W., surgeon, three days' leave of absence under Paragraph 191 of the Regulations.
Wickes, H. W., P. A. surgeon, to rejoin station at Reedy Island Quarantine.
Mathewson, H. S., P. A. surgeon, granted leave of absence for five days from March 13.
Billings, W. C., P. A. surgeon, granted extension of leave of absence for five days from March 17.
Wilson, R. L., P. A. surgeon, relieved from duty at the Hygienic Laboratory. Bureau letter of February 8, granting leave of absence for one month from March 1, 1905, amended so that said leave shall be for twenty-three days.
Berry, T. D., asst.-surgeon, to report to chairman of board of examiners at Washington, D. C., March 27, 1905, for examination to determine his fitness for promotion to the grade of P. A. surgeon.
McLaughlin, A. J., asst.-surgeon, to report to chairman of board of examiners at Washington, D. C., March 27, 1905, for examination to determine his fitness for promotion to the grade of P. A. surgeon.
Long, J. D., asst.-surgeon, to report to chairman of board of examiners at Manila, P. I., May 15, 1905, for examination to determine his fitness for promotion to the grade of P. A. surgeon.
Francis, Edw., asst.-surgeon, to report to chairman of board of examiners at Washington, D. C., March 27, 1905, for examination to determine his fitness for promotion to the grade of P. A. surgeon.
Boggess, J. S., asst.-surgeon, granted leave of absence for four days from March 21.
McCoy, G. W., asst.-surgeon, to report to chairman of board of examiners at Manila, P. I., May 15, 1905, for examination to determine his fitness for promotion to the grade of P. A. surgeon.
Warren, B. S., asst.-surgeon, to report to chairman of board of examiners at Washington, D. C., March 27, 1905, for examination to determine his fitness for promotion to the grade of P. A. surgeon.
Ebersole, R. E., asst.-surgeon, granted leave of absence for ten days from March 15.
Barnes, W., A. A. surgeon, granted leave of absence for two days from March 15.
Hammond, A. P., A. A. surgeon, granted leave of absence for five days from March 7, 1905, under Paragraph 210 of the Regulations.
Walkley, W. S., A. A. surgeon, granted leave of absence for two days from March 16.

BOARDS CONVENED.

Board convened to meet at Washington, D. C., March 27, 1905, for the examination of assistant surgeons. Detail for the board: Asst.-Surgeon-General G. T. Vaughan, chairman; Surgeon D. A. Carmichael; P. A. Surgeon Jos. Goldberger, recorder.

Board convened to meet at Manila, P. I., for the examination of assistant surgeons. Detail for the board: P. A. Surgeon V. G. Heiser, chairman; P. A. Surgeon Carroll Fox; P. A. Surgeon C. W. Vogel, recorder.

Bureau letter of March 8, 1905, convening a board to meet at San Francisco, April 3, 1905, for the examination of assistant surgeons, revoked.

Health Reports.

The following cases of smallpox, yellow fever and plague have been reported to the Surgeon General, Public Health and Marine-Hospital Service, during the week ended March 17, 1905:

SMALLPOX—UNITED STATES.

District of Columbia: Washington, March 4-11, 3 cases.
Florida: Jacksonville, March 4-11, 1 case.
Georgia: Macon, March 4-11, 1 death.
Illinois: March 4-11, Chicago, 6 deaths; Danville, 16 cases.
Kentucky: Louisville, March 2-9, 4 cases.
Louisiana: New Orleans, March 4-11, 17 cases, 5 imported.
Michigan: Detroit, March 4-11, 1 case; at 187 places, Feb. 18-25, present.
Missouri: St. Louis, March 4-11, 38 cases, 2 deaths.
New York: March 4-11, Mount Vernon, 1 case; New York City, 1 case.
Ohio: Zanesville, Jan. 28-Feb. 4, 1 case.
South Carolina: Charleston, March 4-11, 2 cases; Greenville, Feb. 25-March 11, 7 cases, 8 deaths.
Tennessee: Memphis, March 4-11, 20 cases; Nashville, March 4-11, 1 case.
West Virginia: Wheeling, Feb. 25-March 4, 1 case.
Wisconsin: Milwaukee, Feb. 25-March 11, 28 cases.

SMALLPOX—FOREIGN.

Brazil: Bahia, Jan. 21-Feb. 16, 27 cases, 2 deaths; Para, Feb. 7, present; Rio de Janeiro, Jan. 29-Feb. 12, 47 cases, 22 deaths.
China: Shanghai, Jan. 22-Feb. 4, 15 cases foreigners, 35 deaths natives.
Ecuador: Guayaquil, Feb. 14-21, 2 deaths; Porto Viejo, Feb. 23, present.
France: Paris: Feb. 18-25, 23 cases.
Great Britain: Feb. 18-25, Birmingham, 3 cases; Leeds, 4 cases; Leith, 1 case; Newcastle-on-Tyne, 11 cases; Nottingham, 1 case; South Shields, 5 cases; Glasgow, Feb. 27-March 3, 2 cases.
India: Bombay, Feb. 7-14, 124 deaths; Calcutta, Feb. 4-11, 4 deaths; Karachi, Feb. 5-12, 3 cases, 2 deaths; Madras, Feb. 4-10, 2 deaths.
Italy: Catania, Feb. 18-25, 1 death.
Norway: Christiania, Feb. 11-25, 3 cases.
Russia: Moscow, Feb. 4-18, 13 cases, 4 deaths; Odessa, Feb. 11-18, 2 cases, 1 death; St. Petersburg, Feb. 4-11, 5 cases.
Spain: Barcelona, Feb. 10-20, 20 deaths.
Turkey: Constantinople, Feb. 12-19, 4 deaths.
Uruguay: Montevideo, Feb. 7, epidemic.
West Indies: Grenada, Feb. 9-23, 10 cases.

YELLOW FEVER.

Brazil: Rio de Janeiro, Jan. 29-Feb. 12, 16 cases, 7 deaths.
Ecuador: Guayaquil, Feb. 14-21, 4 deaths.
Panama, Panama, Jan. 1-March 4, 33 cases, 14 deaths.

PLAGUE—FOREIGN.

Brazil: Rio de Janeiro, Jan. 27-Feb. 12, 20 cases, 6 deaths.
India: Bombay, Feb. 7-14, 537 deaths; Calcutta, Feb. 4-11, 106 deaths; Karachi, Feb. 5-12, 54 cases, 52 deaths.

Medical Organization.

THE COMING STATE MEETINGS.

J. N. McCormack, M.D.

NATIONAL ORGANIZER OF THE AMERICAN MEDICAL ASSOCIATION.

BOWLING GREEN, KY.

It has been my privilege within the last four years—and I esteem it to have been a great one—to attend the meetings and to make a careful study of the proceedings and the methods of nearly all of the state societies in the United States. The meetings in some states were so interesting and profitable and in others so barren of practical results as to make the causes for this disparity an interesting subject for investigation, especially as the available material and personnel for the programe usually seemed to be about equally abundant.

The success of these meetings is so important at the present stage of the organization work, and is so dependent on the forethought and the efficiency of president, secretary, committee on scientific work, committee of arrangements, councilors and other officers, that it seems proper for me, in the light of an experience which has not before been possible to any other person, to offer some suggestions for the consideration of those charged with such important duties during the transition from the old to the new plan of organization. As practically all but three of these societies are now operating under the uniform plan, my suggestions will be directed more especially to methods adapted to work under it.

The secretary, councilors and committee on scientific work should have begun the preparation for the next annual program from the adjournment of the last meeting. If they have kept in close touch with their county societies, through the abundant agencies provided in the by-laws, and have made these the active bodies and feeders they were intended to be, and have stimulated members to present their best work there, in the way of postgraduate and original investigations, as well as set papers and discussions, and have followed these up during the year, it will be largely a question of selection to get the best of these for their programs, revised and revamped as a result of the criticism to which they were subjected in the home society. These should be grouped into symposia, as far as practicable, and those who are to take part in the discussions should be prepared for crisp, brief and well-digested talks, to be followed by free general discussion, strictly limited as to time and kept well in hand by the pre-

siding officer and the "master of debate," selected from the committee on scientific work. This assistant to the secretary should be on the alert, constantly but unobtrusively, to see that those who are to take part in the discussions are in place and ready for the duties assigned them. Promising younger members who have been especially active in their county societies should be encouraged by being given places on the program for both papers and set discussions, the older members being relied on more for the general discussions. A sharp lookout should be kept for such young men at all times in the proceedings of both the county and state meetings. No one should ever be put on the program who failed from any cause except illness to fill any part assigned to him at the last meeting, and this rule should be given prominence on the printed program. Two ushers should be on hand constantly to see that members and visitors are seated, and especial attention should be given to such older members as are in the habit of grouping themselves together in the rear of the hall and disturbing the proceedings by loud conversation and other unseemly practices.

With such a program and arrangements, and freed from the time-consuming parliamentary and business discussions, and the duty of electing the officers, the general meeting can in future devote its entire time to scientific work. Under a model program, of which I have seen several in operation, the invocation, address of welcome and response should be followed by the first symposium within twenty minutes after the meeting has been called to order, and papers and discussions should follow from hour to hour and from day to day until the program has been completed without an intervening motion, unless it be some motion directly connected with the scientific work. A motion on any other subject should, of course, go to the house of delegates at once and without debate.

No exhibit should ever be permitted about the hall or its approaches, and the contracts should always require that they be closed during the hours of meeting. Nothing unethical should even be considered for the exhibit rooms, and probably nothing should be admitted which is not advertised in the state journal, where one is maintained.

The duties of the house of delegates are so well defined in the constitution and by-laws as to require little elaboration. Its program should be entirely distinct from that of the General Meeting, following it in the same leaflet, for the information and guidance of all members. Its first meeting should be held in the afternoon of the day preceding that fixed for the General Meeting. By holding an afternoon and evening session thus in advance its business may usually be so shaped as to enable delegates to attend nearly all of the scientific meetings. Its hall may be much smaller, but should have convenient rooms for committees and should be sufficiently remote from the hall assigned to the General Meeting to prevent interruption, should it be necessary, for any reason, for both bodies to be in session at the same time. The importance of these details should be impressed on the committee of arrangements long in advance, as much of the comfort and success of the session will depend on the attention given to them.

At least one session should be devoted to the discussion of the status and enforcement of the medical and health laws of the state. The state board of health and the state board of medical examiners, or delegates from these bodies, should be invited to be present and take part in these discussions, with the view of securing the harmony and concert of action so essential in procuring and enforcing proper legislation. Through the delegates, detailed reports should be heard as to the condition and needs of the profession in each county, supplemented by suggestions and recommendations from the councilor of the district. To do all these things, in addition to the manifold other duties imposed by the by-laws, it may sometimes be necessary for the house to sit on the second or third day while the General Meeting is in session, but this should be avoided if possible, even if it is necessary to remain in session for a day after the larger meeting has adjourned. As this body will grow in importance and occupy more and more time as the methods for the enforcement of medical and health laws are perfected, no one should accept the office of delegate who will not devote himself to the work set for him and remain each year until it is completed.

Meetings conducted on the plans here outlined are pleasant and successful almost beyond the conception of those who are only familiar with the methods of the old societies. As soon as the possibilities within reach under them are fully realized they will attract the attention and command the respect of all those interested in scientific medicine in every state, and give satisfaction to all except the few politicians and senior wranglers who could talk endlessly on parliamentary or business questions under the old régime, without effort or preparation.

Ramsey County Medical Society.

The annual meeting of the Ramsey County Medical Society, says the editor of the *St. Paul Medical Journal*, showed the most satisfactory and prosperous condition of its affairs that has existed in its entire history. The library has grown in size and usefulness, and now has upward of 4,500 volumes on its shelves, and receives regularly and keeps on file 150 periodicals. During 1904, 1,500 readers used the library. The catgut industry is growing rapidly, and its profits and those of the *Journal* were larger than in any previous year, and from these two sources there was added a very substantial sum of money to the building fund of the society, which is assuming very respectable proportions. The members of the Ramsey County Medical Society may well be proud of the work they are doing, and each member of the society should make an effort to do something to help our money-makers during the year. Keep an eye open for new subscribers to the journal; when the agents of the pharmaceutical and instrument houses come around ask them if their firms advertise with us, and when you can consistently do so favor those who do advertise with us. Talk catgut to your friends from out of town, and if they have not used our catgut see that they do so; the laboratory will gladly send sample envelopes whenever asked to do so. Remember that every member of the society is a part owner in our property, and that the more money we make the sooner we will be able to accomplish what we are all working for, the acquisition of a building and a home of our own.

Society Proceedings.

COMING MEETINGS.

AMERICAN MEDICAL ASSOCIATION, Portland, Ore., July 11-14, 1905.
Medical Association of the District of Columbia, Washington, April 4.
Association of American Medical Colleges, Chicago, April 10.
Tennessee State Medical Association, Nashville, April 11.
South Carolina Medical Association, Greenville, April 12.
Medical Association of the State of Alabama, Montgomery, April 18.
Medical Society of the State of California, Riverside, April 18-20.
American Medico-Psychological Association, San Antonio, Texas, April 18-21.
Florida Medical Association, Jacksonville, April 19.
Medical Association of Georgia, Atlanta, April 19.
Mississippi State Medical Association, Jackson, April 19.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Regular Meeting, held Feb. 8, 1905.

The President, Dr. James M. Anders, in the Chair.

Symposium on Gastric Ulcer.

ETIOLOGY AND PATHOLOGY.

DR. JOSEPH MCFARLAND concludes that two factors, one incidental and one essential, are engaged in the etiology of gastric ulcer. The incidental factor is the gastric juice, containing the proteolytic serum without which the formation of gastric ulcer is impossible. The essential factor is a loss in the natural immunity of a circumscribed portion of the gastric mucous membrane, in consequence of malnutrition, resulting from thrombosis, embolism, traumatic injury and the other obstructions of the minute nutrient vessels in the gastric wall, or their infections or toxic agents circulating in these vessels. The relation of anemia to gastric ulcer he thinks quite as probably secondary as primary.

INCIDENCE IN PHILADELPHIA.

DR. ALBERT P. FRANCINE analyzed the postmortem records of the Philadelphia Hospital for the years Jan. 1, 1893, to Dec. 31, 1903, inclusive, and based the following conclusions on the result of his studies: Total number of autopsies in these years, 2,830. Ulcers in association with chronic neph-

ritis, 16 gastric and 1 duodenal; with tuberculosis, 11 gastric and 1 duodenal; with both tuberculosis and nephritis, 3 gastric: with chronic bronchitis, 1 gastric; with pneumonia, 1 gastric; with atelectasis of lung, 1 both gastric and duodenal; with carcinoma of stomach or elsewhere, 4 gastric; with fatty heart, 1 both gastric and duodenal; with enterocolitis in infants, 2 gastric. In 20 out of 42 cases, 47 per cent., the ulcers were multiple. The sexes were equally divided. The average age for males and females was 43 years. The greatest number of cases in males (5) occurred between 50 and 60 years, and in females (5) between 40 and 50 years. Three of the cases were in infants, 10, 20 and 36 months old. The largest ulcer measured 9 cm. to 10 cm. by 8 cm. to 10 cm.

SYMPTOMATOLOGY AND DIAGNOSIS.

DR. CAMPBELL P. HOWARD of Baltimore said the mode of onset in the majority of cases is gradual and insidious. In the smaller group hematemesis and perforation are sudden. In acute gastric ulcer blood is, as a rule, vomited. In the chronic form pain, vomiting and hematemesis are cardinal symptoms. In every case of gastric ulcer there is some hemorrhage, though it may not appear for months or years after the onset. The physical examination is negative in many complicated cases, except that tenderness is present. The most frequent secondary complications are hypertrophy of the pylorus, adhesions and inverted viscera. Dilatation of the stomach signifies pyloric obstruction.

MEDICAL TREATMENT.

DR. F. P. HENRY said that the tendency of gastric ulcer is toward recovery; therefore, the object of treatment should be to assist nature, and the most important indication is rest, both general and local. The latter is best secured by rectal feeding. Opium and its preparations per os are conducive to rest by allaying pain and peristalsis and blunting appetite. Hyperacidity should be counteracted by lime water and bismuth rather than by sodium bicarbonate, which, on account of the evolution of gas attendant on its administration, might distend the stomach to a dangerous extent. Milk, raw, boiled or peptonized, is the best article of diet in the early stages. Buttermilk is sometimes an excellent succedaneum. The formation of tough coagula may be prevented by mixing the milk with a little well-boiled flour or arrowroot. Of medicines he recommends bismuth subnitrate in large doses, suspended in barley water or mucilage. Nitrate of silver is useless and calomel injurious, interfering with healing processes. Carlsbad water and Carlsbad salts are useful as antacids and laxatives. When chlorosis is present, iron albumin prepared extemporaneously by mingling a solution of sesquichlorid of iron with "egg water," is recommended.

SURGICAL TREATMENT.

DR. WILLIAM L. RODMAN stated that this resolves itself into treatment of the ulcer itself and of the several complications. He believes that perforation is far more common than is thought. The treatment of hemorrhage is generally medical, but if there is shown a recurring feature the treatment should be surgical. The treatment of stricture or hour-glass stomach is a question of physics and not of chemics, and generally should be by operation. Uncomplicated gastric ulcer, in the vast majority of instances, can be treated by medical means. One should operate only after medical means have been fairly tried for at least four weeks without results. Then the abdomen should be opened, but without any positive convictions of what should be done until the stomach is examined from the pylorus to the cardia, after which the procedure best adapted to the conditions present should be carried out.

DISCUSSION.

DR. ALFRED STENGEL agreed with Dr. Howard that it is possible to distinguish between the acute and chronic form of ulcer, but that this is a clinical rather than a pathologic differentiation. Chronic forms of ulcer impress him as being simply of the indolent type with the same general pathologic basis and nature as the acute, but with different local conditions which cause their different course. Statistics would be much clearer if all cases were based on a pathologic study after careful discrimination between the different types of ulcers and erosions, which ought not to be called ulcers. He agreed that gastric ulcer is a medical disease, unless resistance shows that medical treatment will not avail. He thought the frequent association of gastric ulcer with nephritis and tuberculosis shown by Dr. Francine in the statistics of Blockley might be accounted for by the character of the patients in that hospital.

DR. JOHN H. GIBBON believes that many cases of gastric ulcer that recover after operation do so because of the after-treatment. The patient should be fed by the bowel for three weeks. He referred to the fact that often in the presence of gastric symptoms and a palpable tumor in the abdomen there is the belief that malignancy is present and a wrong prognosis is therefore given. In all such cases where there is the slightest doubt he advises exploratory operation.

DR. LAMBERT OTT found that the administration of 5 grains of nitrate of silver in 6 ounces of water, a tablespoonful in a wineglass of water half an hour before meals, gives good results. He does not approve of boiled milk as a dietary, but has accomplished the best results in using milk as a basis with broth.

DR. JOSEPH SAILER said that the rather small percentage of gastric ulcer in this country suggested the possibility of the condition being overlooked by pathologists. He thinks the most important element in treatment is absolute rest. Reports of different men show practically the same results whether feeding is by the mouth or rectum. He prefers the latter method. After commencing alimentation by the mouth, olive oil and some of the bland nutriments may be given without harm to the mucous membrane of the stomach. The entire disappearance of symptoms for two or three weeks, with no blood in the stools, and the patient on a liberal diet, may be accepted as evidence of recovery.

Therapeutics.

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns.]

Cystitis.

H. K. Stockwell, Yarmouth, Me., recommends the following combination, which, in his experience, has proved very satisfactory in the treatment of cystitis associated with alkalinity of the urine.

℞ Salol. |
Acidi boracici, āā.....gr. v |3
Codeinæ sulph. .....gr. ¼ |01

M. Ft. chartula No. i. Sig. One powder after meals and at bedtime.

Measles.

Stevens, in *Med News*, outlines the following treatment in measles: Administer small initial doses of calomel, preceded by a glycerin suppository. The severe vomiting is usually best controlled by cracked ice, lime water or bismuth. The following is recommended to increase the elimination by the skin and kidneys:

℞ Potass. citratis .....ʒii 8|
Vini ipecacuanhæ .....ʒii 8|
Tinct. opii camph.....ʒiii 12|
Syr. tolutani .....ʒi 30|
Aquæ cinnamoni q. s. ad.....ʒiii 90|

M. Sig.: One teaspoonful every three hours.

Pulmonary Hemorrhage.

Hemoptysis occurs in the first stage of tuberculosis occasionally, in the second stage rarely, in the third stage frequently, according to Seymour Taylor of London. If it occurs in the first stage it does good, as a rule, and not harm.

The treatment of hemoptysis in the third stage, according to this author, is most important. In carrying out this treatment attention must be given to the house, to the room and to the patient. As to the house, the physician in attendance must get rid of friends, allay all noise, institute proper ventilation, and give assurances of recovery to the patient. No examination of the patient should be made except to locate the seat of hemorrhage. Do not raise the patient to an upright position nor turn him in bed. There is no harm in the patient fainting. The patient should not be left until the hemorrhage stops. The treatment consists in: 1, Local applications of ice, which do no good except in old superficial cavities, unless confidence is given the patient; 2, wet cupping, by the withdrawal of from one to two ounces of blood, is of service.

The cough may be relieved by means of hypodermic injections of opium or morphin. Or the following may be given:

℞. Liq. ext. opii (B. P.) ..... m. x | 65
Ext. ergotæ fld ..... m. xv | 1
Tinct. digitalis ..... m. x | 65
Aquæ camphoræ ..... ℥i | 30

M. Sig.: One teaspoonful every two hours.

Calcium chlorid is also recommended, given internally, in the treatment of the hemorrhage. The following day, after the hemorrhage has been checked and reaction has taken place, as shown by the elevation of the temperature and pulse, bleeding will do good after from 24 to 36 hours have passed.

The mineral acids are not of much importance in the treatment of hemoptysis, according to this author. However, the following combination is worthy of trial:

℞. Acidi sulphurici dil. ..... gtt. x | 65
Liq. morphinæ hydrochlor. ..... gtt. v | 30

M. Sig.: To be taken at one dose and repeated in three hours.

The vegetable acids (gallic and tannic) are of no value. By producing astringent effect in the bowels the pulse goes up and hemorrhage recurs.

Calomel is recommended given in three-grain doses (.20).

Potassium iodid may also prove valuable if given in small doses at first, so as better to saturate the system.

Ingals recommends as the most efficient remedies in checking the hemorrhage, full doses of ergot, gallic acid, or lead acetate and opium. Hemorrhage may sometimes be checked by the inhalation of a spray from a weak solution of the following:

℞. Liq. ferri subsulphatis ..... m. x | 65
Aquæ q. s. ad ..... ℥i | 30

M. Sig.: To be used as a spray.

It must not be forgotten that, as a rule, the hemorrhage usually ceases in a short time by simply keeping the patient at rest, whether remedies are used or not.

The following combinations are sometimes recommended in the treatment of pulmonary hemorrhage:

℞. Pulv. opii ..... gr. vi | 40
Acidi gallici ..... gr. xxx | 2

M. Ft. cap. No. xii. Sig.: One capsule every three hours. Or:

℞. Pulv. opii ..... gr. v | 30
Plumbi acetatis ..... gr. xx | 1 | 30

M. Ft. cap. No. x. Sig.: One capsule every three hours.

In any case, there is often greater danger of doing too much than too little.

Ergotin is also of value, according to some authorities, combined as follows:

℞. Ergotini ..... ℥ss | 2
Morph. hydrochlor. ..... gr. iss | 09

M. Ft. pil. No. x. Sig.: One pill three times a day. Or:

℞. Spts. terebinthinæ ..... ℥iss | 6
Olei amygdalæ ..... ℥iss | 6
Mucil. acaciæ ..... ℥v | 20
Syr. simplicis ..... ℥v | 20
Aquæ q. s. ad ..... ℥viii | 240

M. Ft. emulsio. Sig.: One tablespoonful every hour.

The following treatment of hemoptysis is suggested by the *Med. Press:* Injections of forty drops (2.65) of a 1-1000 adrenalin solution, or injections of gelatin one and a half drams (6.00) to ten ounces (300). Or:

℞. Hydrastinin hydrochlor. ..... gr. ii | 12
Aquæ ..... ℥v | 150

M. Sig.: One tablespoonful every hour. Or:

℞. Hydrastinin hydrochlor. ..... gr. ss | 03
Quin. hydrobrom. ..... gr. i | 06
Ext. belladonnæ ..... gr. 1/5 | 012

M. Ft. pilula No. i. Sig.: One such pill night and morning. Or:

℞. Calcii chloridi ..... ℥i | 4
Tinct. opii ..... ℥ss | 2
Syr. aurantii ..... ℥i | 30
Aquæ menth. pip. ..... ℥iv | 120

M. Sig.: One tablespoonful every two hours.

Fitzgerald, in *Cleveland Medical Jour.*, states that the best treatment of hemoptysis requires: 1, Absolute physical rest; 2, mental quiet and relief from fear and anxiety; 3, morphin and atropin in sufficient doses to insure both the preceding; 4, control of cough, fever and pleuritic pain, and careful attention to diet; 5, suggestive measures as icecaps over the heart, salt and cracked ice by the mouth; 6, free use of bromids and nerve sedatives in the nervous patient; 7, nitrates or veratrum when high blood pressure persists; 8, care in not placing too much reliance on so-called specifics such as ergot and adrenalin; 9, hypodermoclysis with normal saline solution when indicated.

Dietetics in Constipation.

In the treatment of constipation, according to S. Cohn in *Jour. of Advanced Ther.*, one must be sure that he is dealing with a true case of habitual constipation, which is not always an easy matter. Hemorrhoids, fissures of the anus, hypertrophy of the prostate, tumors of the uterus or ovaries, retroflexion or anteflexion of the uterus may all give rise to constipation. Diseases of the intestines themselves, such as stenosis, and diseases of the stomach, such as hyperacidity and anacidity, may produce similar conditions.

When the constipation is due to a faulty condition of the bowels, either hygienic or dietetic errors are generally the cause. One of the greatest abuses in correcting the constipation is the use of drugs which will destroy, after a while, the function of the bowel. Another frequent cause is the neglect of the patient in attending the calls of nature. Patients suffering from constipation generally drink an insufficient amount of water. Cold water will stimulate and cause a more rapid and copious secretion of the digestive juices, therefore it is preferable to warm water. Patients should make it a rule to drink between six and eight glasses of water a day. Very little residue is left from the proteids consumed, consequently the bulk necessary for stimulation is made up from the vegetables. The residue from the proteids is 4.9 to 5.2, while that made up from vegetables, such as rye bread, beets, cabbage, turnips, beans, is about 20.

In summing up the treatment of constipation he states that one must begin with: 1. Correction of bad habits. 2. Regulation of the diet. This may be done by avoiding concentrated foods and by partaking of vegetables rich enough in coarse fibers to make sufficient bulk to furnish mechanical stimulation to the bowel. Food should be selected which is rich in elements for the formation of organic acids, and for the liberation of gas, thus producing chemical stimulation of the intestines. 3. The liberal use of water, at least six to eight glasses in the twenty-four hours.

As an example, he recommends for breakfast: Fruit, cereal with cream and sugar, but no predigested foods; rye bread with much butter, with a moderate amount of meat and eggs. For dinner: Soup, meat or fish, an abundance of green vegetables such as spinach or cabbage, beets, turnips, potatoes, beans, peas and rye bread and butter, and as dessert a saucer of prunes or pudding. For supper: Cold meat, rye bread and butter, stewed fruit and plums or prunes.

Cancer.

In the *Semana Médica* of Buenos Ayres, R. Berdier and V. de Falabert report the use of subcutaneous or local injections

of adrenalin in the treatment of cancer. In the 9 cases reported, the cancer and adjacent swollen glands diminished in size under the influence of injections of .5 mg. of 1 per 1,000 adrenalin, the pains were abolished and the patients gained for a time in weight and strength, although all were advanced cases. The injections were made into the tumor, or, when this was inaccessible, into the arm or over the organ involved. The cancers were in the throat, tongue, esophagus, stomach or cervix. The cessation of pain rendered the previously indispensable morphin unnecessary. In one case conditions were so much improved after 25 local injections of .5 mg. adrenalin in thirty days that the removal of the previously inoperable growth in the cervix was advised. An apparent cure was realized in a case of supposed epithelioma of the nasopharynx. The parts had nearly regained their normal aspect after fifteen injections of the adrenalin into the tumor in less than a month. After this the fluid was injected subcutaneously for a few days, and the patient has been in good health since, having gained more than 2 pounds in two months. In another case a large chancroid on the neck became reduced to a circumference of 2 cm. under the influence of 30 daily injections of .5 mg. each. The other patients all died after an unexpectedly long survival. The authors are convinced that there is some connection between cancer and the sufficiency or insufficiency of the suprarenals.

Medicolegal.

Admissible Declarations of Sick or Injured Person.—The Supreme Court of North Dakota holds, in the case of Puls vs. Grand Lodge of the Ancient Order of United Workmen of North Dakota, that the declarations of a sick or injured person as to the nature, symptoms and effects of the disease or injury under which he is suffering at the time are competent evidence in an action wherein the nature and cause of the malady are in question.

Damages Allowed for Wrongful Taking of Stomach from Dead Body.—The Supreme Court of Wisconsin says that the case of Koerber vs. Patek presented a field for consideration unchartered by any direct decisions in that court. It was alleged in the complaint that the plaintiff was the son and heir of his mother, who died in a hospital, and was by her, before her death, instructed and requested to take charge of her body for purposes of burial, and was the only person interested; that he did so, removing the body to his residence, and proceeding to have the same prepared for burial; that the defendant requested permission to merely examine the stomach of said body, which request being granted, he wilfully, etc., without authority, etc., cut out and carried away the stomach, and refused to return the same on request, whereby burial became necessary without it; that thereby the rights of the plaintiff had been recklessly and wilfully trespassed on, and his feelings greatly injured, so that he had suffered both in mind and in body, to his damage $5,000. The conclusion of the Supreme Court, reached after discussion, protracted, it says, perhaps unduly in deference to the novelty of the question in Wisconsin, and to the earnestness of counsels' argument, is that the complaint stated a good cause of action in favor of the plaintiff, and that the trial court erred in sustaining a demurrer to it.

Visible Marks of Injury—Choosing Treatment.—The Court of Appeals of Colorado says, in United States Casualty Company vs. Hanson, an action on a policy of accident insurance brought by the latter party, that the policy contained numerous conditions, which, not satisfied, would defeat a recovery—among them, a requirement of a visible mark of injury on the body of the insured. But, as to this condition, the court says there was evidence bringing the case within it. A shrinkage of the muscles of the hip and leg and a lameness of the leg were visible marks of the injury, within the authorities. So was the breaking down of the bones at the joint, which was perceptible to digital examination. Another provision of the policy was that the injury received must be the sole cause of the disabled condition of the insured. He was examined by one physician, and by him advised as to the course of treatment, but failed to follow it. It was said that in this he was guilty of negligence, which negligence materially contributed to his subsequent disabled condition, and that, therefore, the injury originally received was not the sole cause of his condition. But the court says that while the insured did not follow the advice of the physician referred to, he did follow the treatment of other physicians, presumably of standing; and the court can not say that the verdict of the jury, in acquitting him of negligence in so doing, should be disturbed.

Liability for Death of Follower Denied Medical Care—Use of Prayer.—The Supreme Judicial Court of Maine says that in the case of State vs. Sandford the latter was tried and convicted on an indictment charging him with manslaughter in causing the death of a youth of 15, named Bartlett, a member of a community or religious sect, who died of diphtheria. It was not claimed by the state that the defendant had the immediate care of Bartlett during his last sickness, nor that it was the defendant's personal duty to attend to his wants, either as to medical remedies or to the supply of necessary and proper food. But the contention of the state was that the defendant exercised such control over those who were in attendance on and caring for Bartlett, that he dominated their wills to such an extent, that his orders were carried out in the treatment of Bartlett by those who were subservient to his will, and whose conduct in this respect, as well as in all others, was subject to his control and authority, and that the neglect complained of in these respects by those who were in attendance on and who did have the care of Bartlett, was the result of the defendant's general or specific directions. The court says that it was necessary for the state to prove its contention in this respect, and for this purpose it thinks that it was entirely competent to introduce evidence of specific instances showing the manner and extent that authority was exercised by the defendant in these instances. As to the contention of the state that the defendant failed to perform a known duty owed by him to Bartlett by not providing medical attendance and medical remedies for the latter in the serious condition in which he then was, the court says that there was no dispute whatever as to the facts, the defendant relying, as an answer to this contention, on an alleged conscientious disbelief in the efficacy of medical remedies, and on a belief that the proper treatment of the sick was by prayer. In relation to this position of the defense the following instruction was requested by the defendant: "Failure to provide medical aid or the attendance of a physician, with resulting death, in the absence of a statute requiring medical aid or the attendance of a physician, if the action is under the bona fide belief that medical aid is not required, and that the proper method of healing is by prayer, is not manslaughter." The trial court had already given this instruction in substance, but had added the following qualifications: "That is, it must be a conscientious disbelief in medicine, a bona fide disbelief, a real disbelief. And if a person having that disbelief in medicine had some other belief, or some other practice, or some other way to help cure the sick, which he honestly believed, it would then be his duty to apply that other method; and so, if he believed in the prayer of faith, he ought to apply that. But if he failed to use the prayer of faith, unless you believe that the lack of it hastened the death, or caused the death of the patient, the omission to use the prayer of faith would not be criminal negligence, because it did not produce any results. On the other hand, if you believe that the omission to use the prayer of faith did hasten the death of Leander Bartlett, and if that was the honest belief of the defendant, and he failed, knowing the circumstances, knowing his duty, why it would constitute a basis for manslaughter, would be evidence of negligence." The Supreme Judicial Court holds that the instruction given as qualifications to the instructions requested by the defendant were erroneous; that under these instructions the conviction or acquittal of the defendant would depend, not

on the jury's finding as to the truth of some controverted fact about which there was no evidence for and against, not as to the truth of some scientific theory, as to which those specially qualified by study and experience had testified, questions which, of course, must be submitted to the determination of the jury, but on the belief of the individual members of the jury on the question of the efficacy of prayer as a means of cure for the sick. The guilt or innocence of any person accused of crime, whatever his belief may be in this respect, and the result of a criminal trial, should not depend on the beliefs of the members of a jury on the question of the efficacy of prayer as a means of cure for the sick, or on their religious belief in any other respect. Questions of fact, and even questions as to the truth of scientific theories, must be submitted to the determination of juries; but the questions as to the nature of one's legal duties and the extent of his legal responsibilities, both civil and criminal, must be governed by general rules of law, which will apply to all alike, and which will control the action of juries, so that one result only can follow from their findings of fact on the issues of fact involved. It may be true that where a person is charged with responsibility of the death of another because of his failure and neglect to procure medical attendance or to allow the use of medical remedies, and such person has a conscientious disbelief in the efficacy of such treatment and the use of such remedies, but does believe in the value of some other form of treatment, if any there be, which is recognized by some school of science as proper under the circumstances of the case, that it would be his duty to resort to this recognized form of treatment believed in by him, and that a failure to do so might be evidence of neglect on his part sufficient to hold him criminally liable for the death of a person which resulted from such failure. A suggestion made in Reg. vs. Wagstaffe, 10 Cox, C. C. 530, aptly illustrates this court's views in regard to the responsibility of a person who entertained a particular belief as to the proper method for the treatment of the sick. Suppose a person charged with a neglect of duty in the respect which we have been considering believed conscientiously that the only efficient remedy for a person afflicted with disease was to take the person to a particular shrine, could it be that a failure to do this would sustain a charge of manslaughter, even if the jury believed that this failure either caused or accelerated the death of the one diseased? But a person may as conscientiously believe in this remedy as in the efficacy of prayer for the sick, and, while both beliefs may be equally entitled to respect, the conviction of a person in any case should not depend on whether the jury before which he is tried entertains the one belief or the other, or neither.

Current Medical Literature.

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

American Medicine, Philadelphia.

March 11.

1 *Medical Treatment of Gastric Ulcer. F. P. Henry, Philadelphia.
2 Advances in the Physiology and Pathology of the Pancreas, and Their Application to the Diagnosis of Pancreatic Diseases. J. C. Hemmeter, Baltimore.
3 *Consideration of Fibroid Tumors of the Uterus, based on a Study of a Series of 210 Cases Treated Surgically. J. C. Webster, Chicago.
4 *Tuberculosis of the Gastrointestinal Tract: Report of a Case of Perforation and Partial Stenosis of the Bowels. J. A. Lichty, Pittsburg.
5 *Iodin in the Treatment of Postoperative Sepsis. J. H. Burtenshaw, New York.
6 *Etiology and Treatment of Acute and Chronic Rheumatism. G. M. Illman, Philadelphia.

1. **Medical Treatment of Gastric Ulcer.**—Henry has employed Leube's method in modified form in a sufficient number of cases to convince him of its efficacy. His modification consists in nourishing the patient during the first week of treatment, either entirely or partially, by rectal enemata, and in the *pro re nata* employment of opium and its derivatives. He also emphasizes the importance of system in the treatment of this and of any other affection; a system which is sufficiently elastic to adapt itself to the individual case.

3.—See THE JOURNAL, March 18, p. 900.

4. **Tuberculosis of the Gastrointestinal Tract.**—The points of interest in the case reported by Lichty are: The mode of infection, which was rather doubtful, being either primary in the alimentary canal or secondary to a pulmonary lesion; and the fact that the disease was contracted from living with a tuberculous patient.

5. **Iodin and Postoperative Sepsis.**—Although his own experience with iodin in these cases has been disappointing, yet Burtenshaw is convinced that further development of this treatment as outlined by Alloway and Pryor, in the near future will yield brilliant results. Of 3 cases of postoperative sepsis in his practice 2 resulted fatally. The first case was probably due to the use of defective ligatures, but the patient recovered, a result which he attributes more to the degree of infection and to her robust constitution than to the curative measures employed. The infection in one of the fatal cases was traceable to the unavoidable soiling of the peritoneum from the rupture, during operation, of an enormous pelvic abscess; in the other case the source of infection was undiscoverable. It was in this case that the iodin treatment was given its most extended trial, and with absolutely negative result.

6. **Rheumatism.**—In this paper Illman points out the great necessity for prompt treatment of even slight rheumatic manifestations, based on the assumption that the gastrointestinal tract is closely associated with the causation of rheumatism.

Medical Record, New York.

March 11.

7 *Treatment of Epidemic Cerebrospinal Meningitis by Diphtheria Antitoxin. E. Waitzfelder, New York.
8 Chronic Myositis Rheumatica and its Treatment by Massage. G. Norstrom, New York.
9 *Radical Operation for the Removal of a Bullet Weighing 70 Grains, Embedded in the Internal Wall of the Middle Ear, with Decided Improvement in the Subjective Symptoms. M. D. Lederman, New York.
10 *Aortic Regurgitation with Chronic Miliary Tuberculosis in a Man 22 Years Old. M. Leale, New York.
11 *Case of Cicatricial Stricture of the Esophagus. A. B. Atherton, Fredericton, N. B., Can.

7. **Diphtheria Antitoxin in Epidemic Cerebrospinal Meningitis.**—Based on the antagonism existing between the Klebs-Loeffler bacillus and the *Diplococcus meningitidis*, Waitzfelder treated 17 cases of epidemic cerebrospinal meningitis by injecting diphtheria antitoxin, from 6,000 to 10,000 units at one dose, this being repeated as often as was found necessary. Five patients recovered completely, 3 died and 9 are still under observation. Of the latter 5 give every promise of a speedy recovery; the other 4 are still in a serious condition. The greater number of cases were severe in their onset, and the evidence of profound constitutional infection was well marked. It was in this kind of cases that he observed the best results; within two days delirium or coma abated or disappeared; the pulse and temperature became more nearly normal; the tongue more moist, and a general improvement in all the symptoms was manifested. In no case was consciousness absent after three days. The dose given was 6,000 units to children less than 5 years of age, 8,000 to those between 5 and 12, and 10,000 to adults. This amount is injected under the scapula on alternate days. In a few cases an antitoxin rash developed, but never was of much moment. In fact, not a single bad symptom developed as the result of the administration of the antitoxin. From a study of these cases Waitzfelder is led to believe that a larger dose of antitoxin is necessary than is usually given in diphtheria, and that it should be repeated daily until urgent symptoms abate (not to the exclusion of lumbar puncture, which should be made for symptoms indicating cerebrospinal pressure). With the subsidence of delirium or coma, a lessening of the rigidity of the neck, of headache and photophobia, he advises that the amount of antitoxin be diminished, but its use should be continued at longer intervals, until all central nervous symptoms have subsided. He is

fully convinced that this treatment has brought about a diminution of mortality and an absence of sequelæ.

9. **Operation on Ear for Removal of Bullet.**—The interesting feature in Lederman's case is the presence of a foreign body (32-caliber bullet) lodged in the internal wall of the middle ear for a period of over three years, causing chronic suppuration, tissue proliferation, facial paralysis and marked disturbance in equilibrium without more serious complications. The treatment was satisfactory in every way, the facial paralysis slowly improving, and the patient being able to walk quite well without support. Two weeks after operation the ordinary speaking voice was plainly heard in the ear with the good ear closed.

10. **Aortic Regurgitation and Chronic Miliary Tuberculosis.**—The interest in this case centers itself about the combination of aortic regurgitation and chronic miliary tuberculosis, and the occurrence of the former in so young a subject. Leale found it impossible to say whether the valvular lesion was secondary to the miliary tuberculosis, being part of the tubercular process, forming tubercles on or near the segments of the valve, or whether it was an entirely distinct pathologic process.

11. **Cicatricial Stricture of Esophagus.**—Atherton describes a case of cicatricial stricture of the lower end of the esophagus, the result of swallowing some lye by mistake. When first seen, the stricture admitted only an olivary French bougie 2 millimeters in diameter. It became possible, by gradual dilatation, to introduce an instrument of twice this size, but after this no further stretching could be effected. The stomach was opened and the stricture softened by the use of the string and bougie procedure of Abbe, after which gradual dilatation became possible, so that a short red-rubber bougie, 1 cm. in diameter, could be permanently worn. The upper end of this bougie lay at the junction of the pharynx and esophagus, and was secured by a silk thread fastened to a tooth or to one ear. One year has elapsed since the operation, and the patient is obliged to continue the daily use of the bougie, as otherwise the stricture soon contracts.

Boston Medical and Surgical Journal.

March 9.

12 *Clinical Report of 75 Cases of Arthritis Deformans (Chronic Non-tubercular Arthritis). F. L. Richardson, Boston.
13 *Complemental Relations of Glycuronic and Ethereal Sulphuric Acids and Their Pairlings in Auto-intoxication, Typhoid Fever and Cancer. A. E. Austin and E. W. Barron, Boston.
14 Dangers from the "X-ray Atmosphere" to the Operator. Their Prevention. H. W. Van Allen, Springfield, Mass.

12. **Arthritis Deformans.**—The clinical study of 75 cases of arthritis deformans made by Richardson represents one of the preliminary steps in the study of that disease undertaken in the surgical laboratory of the Harvard Medical School. Of these cases, 74 were plainly one of the various types of arthritis deformans, including one case of ankylosing arthritis in an adult woman. There was one case of chronic arthritis due to gout, which, because of its clinical course, was considered during life as a deforming arthritis. Of the 74 patients with arthritis deformans, 26 were men and 48 women. Seventeen patients were single and the remaining 58 were or had been married. The greatest number engaged in one occupation was 31, doing housework; next, 11 laborers, 6 cooks, and 5 laundry workers. In only 7 cases did the patient know of any "rheumatism" in the family. Five patients gave a history of acute rheumatism. In 9 cases, the arthritis was supposed to be of gonorrheal origin. A history of syphilis was found in two men and in two women. The onset of the trouble was acute in 16; subacute in 8; insidious in 35, and unknown in 16. The joints first involved were the wrist and hand in 15; elbow in 1; shoulder in 10; spine in 2; hips in 1; knees in 25; ankles and feet in 6; more than one set of joints in 4; unknown in 10. In 60 per cent. of the cases the percentage of hemoglobin was between 70 and 80, without any marked diminution in the number of erythrocytes. In 1 case the disease was associated with diabetes of a severe type. In several cases there was chronic nephritis. In no case was uric acid found markedly in excess, and in many cases it was found relatively diminished. Richardson agrees with Bradford that the analogy between arthritis deformans and arteriosclerosis appears to be a very close one. In arteriosclerosis the causes to which the disease has been ascribed are innumerable and the manifestations may be widely varied, but because of these numerous manifestations it can not be said that we are dealing with many diseases. That the disease often is the result of some general alteration in the body metabolism seems possible.

13. **Complemental Relations of Glycuronic and Ethereal Sulphuric Acids.**—Austin and Barron summarize the results of a series of experiments carried on by them as follows: Aromatic bodies unite both with ethereal sulphuric acid and glycuronic acid, which apparently have a complemental relation to each other, but the former is always first saturated before union commences with the second. The glycuronic acid apparently varies very decidedly in amount, but it is not necessarily associated with the increase of the pairing body, nor with the diminution of oxidation. Furthermore, there is always present an excess of sulphuric acid beyond the demands of the pairing body.

New York Medical Journal.

March 11.

15 Subcutaneous Injuries of the Abdominal Walls and Viscera. (To be concluded.) Daniel N. Eisendrath, Chicago.
16 *Unusually Severe Case of Acute Chorea Successfully Treated with Apomorphin. M. G. Tull, Philadelphia.
17 Examination of the Feces. I. S. Wile, New York.
18 The So-called Atypical Forms of Gastric Ulcer. J. Kaufmann, New York.
19 *Remarks on the Results of X-ray Treatment in Several Cases of Carcinoma of the Uterus. S. Tousey, New York.
20 *Unique Case of Appendicitis in a Child Aged Fourteen Months. L. W. Glazebrook, Washington, D. C.
21 *Classification for Cases of Pulmonary Tuberculosis and Phthisis. K. Von Ruck, Asheville, N. C.

16. **Apomorphin in Chorea.**—All other methods of treatment proving futile, Tull began the use of apomorphin in an unusually severe case of chorea occurring in a young girl, aged 15 years. One-fortieth of a grain of apomorphin was administered hypodermically. Within three minutes the incessant motion had ceased, the muscles were relaxed, and the patient slept peacefully and quietly. This was followed up with 1/20 of a grain by mouth, every three hours, combined with arsenic. At no time was there any sign of nausea or vomiting. The patient made a steady improvement, with no return of the severer symptoms.

19. **X-Ray in Carcinoma of Uterus.**—Tousey cites a case of carcinoma of the uterus which was remarkably benefited by *x*-ray treatment. The treatment consisted in allowing the *x*-ray to shine through the uncovered abdominal wall, and also through Nott's speculum, and in the application of high-frequency currents. The current used was the 110 volt direct current, with a liquid interrupter of the Simon's type. An 8-inch coil, a 40 cm. tube and a rheostat which cuts the currents down to about 4½ amperes were also employed. The vacuum in the tube was adjusted for each treatment to correspond with an internal resistance of about two and a half inches, and a penetration of two or three layers in the author's radiometer. The distance was 9 inches from the anode of the tube to the nearest surface of the patient; time of exposure, about five minutes over the abdomen and five minutes in the vagina. The high-frequency currents were taken directly from one pole of the *x*-ray coil, by means of an insulated cord passing from the coil to an insulated handle by which the operator held a glass vacuum electrode, which was placed in contact with the skin. The patient's life was prolonged for a year, and death resulted from a serious gastric disturbance which did not seem to be of a cancerous nature. In a second case cited the results were very similar to those obtained in the first case.

20. **Appendicitis in Child Aged Fourteen Months.**—Glazebrook's patient died after an illness lasting about three and one-half hours. The symptoms were those usually met with in surgical shock. At the autopsy the large omentum was found adherent to the vermiform appendix midway between

the cecum and its tip. To the left and posterior to this point about one dram of green pus was found which was escaping from a small perforation of the appendix. On opening the appendix an ordinary black mourning pin was found, the head of the pin occupying the center of the perforation in the appendix. Immediately around the seat of rupture the parts were gangrenous.

21. **Classification of Pulmonary Tuberculosis.**—A classification of pulmonary tuberculosis and phthisis on a clinical basis is offered by von Ruck. It reflects the gravity of the cases grouped together, and has the great additional advantage that it requires no extraordinary skill and experience in placing a given case in its proper group. The second classification given by him explains itself.

CLASSIFICATION OF STAGES FOR CASES OF PULMONARY TUBERCULOSIS AND PHTHISIS.

CHRONIC PULMONARY TUBERCULOSIS.

a. Inactive, closed tuberculosis, latent form, free from fever, reacting to tuberculin, with varied extent of physical signs.

b. Active, closed tuberculosis, with mild tuberculous fever (100.5 F. maximum); otherwise same as *a*.

PULMONARY PHTHISIS.

Class I. Non-febrile Cases.

First Stage.—a. Inactive, initial phthisis, without demonstrable cavity formation, with bacillary sputum; total quantity not exceeding ½ ounce in 24 hours; passive secondary infection; with or without mild complications on the part of pleura. Temperature normal to 99 F.

Second Stage.—a. Inactive phthisis, with single, small, demonstrable cavity formation. Expectoration not exceeding 1 ounce in 24 hours. Passive secondary infection; with or without mild complications on part of larynx, pleura or both. Temperature normal to 99.2 F.

Third Stage.—a. Inactive, advanced, cavernous phthisis, with large or multiple cavity formation. Expectoration exceeding 1 ounce in 24 hours. Passive secondary infection; serious complications, tuberculous or otherwise, on the part of larynx, pleura, intestine, or other organs. Temperature subnormal to 99.5 F.

Class II. Febrile Cases.

First Stage.—b. Active, initial phthisis, with moderate tuberculous fever, or a combination of the tuberculous with that of subacute secondary infection. Expectoration not exceeding ½ ounce in 24 hours, with or without mild complications on part of pleura. Temperature not exceeding 101.5 F.

Second Stage.—b. Active phthisis, with tuberculous fever, or combined secondary fever; demonstrable cavity formation. Expectoration not exceeding 1 ounce in 24 hours. Mild complications on part of pleura or larynx or both. Temperature not exceeding 102.5 F.

Third Stage.—b. Active, advanced, cavernous phthisis, with tuberculous or secondary fever of any degree. Large single or multiple cavity formation. Expectoration exceeding 1 ounce in 24 hours. Complications same as under *a*, or caseous pneumonia, diffused mixed infection, acute miliary dissemination.

CLASSIFICATION OF RESULTS OF TREATMENT OF PULMONARY TUBERCULOSIS AND PHTHISIS.

Cured.—Patients free from all subjective symptoms, without elevation of temperature, without cough or expectoration. Physical signs absent, or indicative of connective tissue changes or cicatrization. General health restored. Tuberculin test applied three months or later after discontinuance of treatment must have proved negative, or above conditions must have been maintained at least for two years after discharge.

Apparently Cured.—Same condition as above, maintained at least for three months after discontinuance of treatment.

Disease Arrested.—Decided retrogressive changes in the physical signs, coexisting with corresponding amelioration of symptoms, only slight cough remaining, expectoration not exceeding 2 drams in twenty-four hours, still containing tubercle bacilli. General health to be approaching normal state. Temperature must be practically normal, not exceeding 99 F. Such condition must have been maintained for three months or longer.

Greatly Improved.—Symptoms and physical signs present on admission must show material reduction, especially cough, expectoration and fever. Weight and strength, if previously deficient, must show decided increase.

Improved.—Symptoms, such as cough, expectoration and fever, have grown less. No loss in weight or gaining on discharge.

Stationary.—No material change in patient's condition. No loss in weight.

Progressive.—Symptoms and physical signs are increased.

Medical News, New York.

March 11.

22 Uric Acid—Its Influence in Gout. C. C. Ransom, New York.
23 Objective and Subjective Symptoms of Surgical Diseases of the Kidney. C. L. Gibson, New York.
24 Laboratory Findings in Surgical Diseases of the Kidney. F. S. Sondern, New York.
25 The X-ray in Kidney Disease. L. G. Cole, New York.
26 Cystoscope and Ureter Catheter in the Diagnosis of Surgical Diseases of the Kidney and Ureter. F. T. Brown, New York.
27 Exploratory Operations Relating to the Kidney. H. Lilienthal, New York.

Lancet-Clinic, Cincinnati.

March 11.

28 Public Care and Treatment of Inebriety. T. D. Crothers, Hartford, Conn.
29 Two Etiologic Factors in Pelvic Diseases in Women, Their Prevalence and Prevention. J. H. Firestone, Freeport, Ill.
30 Gastroenterostomy. W. H. Wathen, Louisville, Ky.

St. Louis Medical Review.

March 4.

31 Diagnosis and Treatment of Gallstones. A. Dixon, Henderson, Ky.
32 Constipation. I. J. Moyer, Pittsburg.
33 Control of Municipal Medical Institutions. What Experience Has Shown. G. Homan, St. Louis.

Journal of the Association of Military Surgeons, Carlisle, Pa

March.

34 First Aid in Naval Warfare. J. C. Wise.
35 Principles of the New Austro-Hungarian Sanitary Regulations for War. J. Steiner.
36 *Gymnastics and Athletics. V. Havard.
37 Malingering; Report of Cases. S. M. De Loffre.

36. **Gymnastics and Athletics.**—A very careful study of the effect of gymnastics and athletics, especially football, on the human economy, is made by Havard, who says that unless the football methods now prevailing are substantially modified, it would be greatly to the benefit of college students were the game eradicated. He found that football is detrimental to studies. As regards mere physical development, better results can be attained by graded gymnastics and less strenuous games. It is more or less dangerous to the body, and in order to reduce liability to injuries and the possibility of disability in after-life, certain important conditions must be observed. Careful training is absolutely necessary in order to develop the highest degree of efficiency and endurance without harm to any of the organs. Of the total number of football players (159) graduated at West Point since 1892, 5 died of disease, representing a mortality of 3.14 per thousand. During the same period of years the mortality from disease for all graduates, 769 in number, was 19, representing a ratio of 2.47 per thousand. Hence the effect of athletic exercises, if any at all, is rather to increase than to diminish mortality in after life. To the 149 living members, a circular letter was sent inquiring as to their condition. To this letter 96 answers were received, all reporting their present health as good, very good or excellent, with 4 exceptions; of these, 3 report their health as bad, attributing it to long tropical service, the fourth reports his health as only fair, because of cardiac enlargement. Fifty-one out of the 96 received an injury of sufficient gravity to disable them more than a day or two. Six are still reminded of injuries received while playing football. The effect on the heart is mentioned in only 2 letters; one reports "slight enlargement" and health only fair; the other, that "a former murmur which might have been due to athletics has disappeared." Havard found that the football player stands almost exactly in the center of his class as far as scholarship is concerned. For the entire number of graduates, 769, the percentage of honor graduates is 15.40, while for football players it is 14.46. Havard is decidedly not of the opinion that football is beneficial to scholarship.

Journal of Experimental Medicine.

Vol. vi, Nos. 4-5-6.

38 *Studies in Hemolysis with Special Reference to the Properties of the Blood on Body Fluids of Human Beings. H. T. Marshall.
39 Epithelioma Adamantinum. H. S. Steensland, Syracuse.
40 *Bacteriology of Bronchopneumonia and Globular Pneumonia in Infancy. M. Wollstein, New York.
41 Malignant Teratoma of the Perineum. R. H. Whitehead, Chapelhill, N. C.
42 Dermatomyositis, with Report of Case Presenting a Rare Muscle Anomaly. W. R. Steiner, Hartford, Conn.
43 Further Observations on a Pathogenic Mould, Formerly Described as a Protozoan (Coccioides Pyogenes). W. Ophüls, San Francisco.
44 *Toxic Effect of Formaldehyd and Formalin. M. H. Fischer, San Francisco.
45 Bacillus Mortiferus. N. M. Harris, Baltimore.

Vol. vii, No. 1.

46 *Changes in the Heart Rates and Blood Pressures Resulting from Severe Hemorrhage and Subsequent Infusion of Sodium Bicarbonate. E. M. Dawson, Baltimore.
47 "Red-Leg"—An Infectious Disease of Frogs. H. Emerson and C. Norris, New York.
48 The Rate of Absorption from Intramuscular Tissue. S. J. Meltzer and J. Auer, New York.
49 Color Reactions of Naphthaquinone Sodium-Monosuiphinate and Some of Their Biologic Applications. C. A. Herter, New York.

50 The Preparation of Salt-free Culture Media and the Growth of Bacteria on Them. A. E. Taylor, San Francisco.

38. **Studies in Hemolysis.**—Studying the comparison of the receptors of the red blood corpuscles of man and of the monkey, Marshall found that goat, sheep, ox, goose and rabbit serum affect monkey blood to almost the same extent that they do human blood, and that human, rabbit and guinea-pig serum fail to produce hemolysis of monkey blood or of human blood; the two last mentioned, however, behaving very similarly in the presence of normal, active hemolysis. With reference to the behavior of human blood corpuscles in the presence of serum from various animals, and the hemolytic properties of normal human serum, he found that human serum has complement available for a variety of normal and specific amboceptors, but that the complement differs in amount in various specimens of human serum. The complement strength of different specimens of human serum for different amboceptors has no definite ratio, and the complements for different amboceptors may vary independently. Concerning the hemolytic properties of human transudates and exudates, he ascertained that the body fluids examined contained complements capable of re-activating various amboceptors; but the re-activating power is not equal in different fluids. The complement strength for a given lysin may vary in several fluids independently of the complement strength for other lysins. The complement action of the body fluids seems to be more pronounced than that of the human serum examined. No amboceptor was found by Marshall which was available for human blood.

40. **Bacteriology of Pneumonia in Infancy.**—Wollstein describes the results obtained from observations made with the view of determining the relationship between the extent of the pneumonic areas and the variety of bacteria present and the difference, if any, between the bacteriology of the primary and of the secondary infections. In 100 cases examined, the pneumococcus was present in 67; of these, 25 were primary and 42 secondary pneumonias. While the pneumococcus appeared in 76 per cent. of the primary cases, it occurred in only 63 per cent. of the secondary cases; and while it was present in pure culture in 42 per cent. of the primary cases, it was found alone in only 15 per cent. of the secondary cases. In the 67 cases showing the pneumococcus, there was inflammation of the pleura in 51 per cent. (34 cases), the lesion being an acute fibrinous exudate in 22 instances (13 secondary, 9 primary), acute purulent exudate (empyema) in 4 instances (2 primary and 2 secondary), and a fibrinopurulent one in 8 instances (2 primary, 6 secondary). The cases from which the pneumococcus was absent (33) showed pleurisy in one-third of the number, the inflammation being of the acute fibrinous variety in 9 instances (3 primary and 6 secondary). The percentage of empyema cases was exactly the same (6 per cent.) in both varieties. Purulent infiltrations of the lungs occurred in 7 cases, and all these contained the pneumococcus either alone or combined with the streptococcus (3 instances) and the *Staphylococcus pyogenes aureus* (1 instance). Small pulmonary abscesses existed in 7 cases. In 5 of these the pneumococcus occurred twice combined with the tubercle bacillus, once with *B. pyocyaneus* and once with the streptococcus. In 2 instances the streptococcus was present alone. Of the 100 cases, 45 were coalescent with the pneumococcus present in 33 instances, or 73 per cent. In 31 of 55 focalized cases, or 56 per cent., the pneumococcus was also found. The cases of primary bronchopneumonia showed a larger percentage of pneumococcus infections than the secondary cases; and the pneumococcus cases showed a larger percentage of inflammation of the pleura, and a greater tendency to purulent infiltration and abscess formation.

44. **Toxic Effects of Formaldehyd and Formalin.**—A very careful study was made by Fischer to determine the toxic effects of formic aldehyd, known as formaldehyd, and formalin, a 40 per cent. solution of formaldehyd in water. He found that the inhalation of formaldehyd gas, even in small quantities, is followed by bronchitis and pneumonia, the latter being due to the inhalation of the gas and not to secondary infection. The introduction of formalin into the stomach was followed by the production of a gastritis which varied greatly in character. In some instances the duodenum and upper jejunum were also involved in the inflammatory process. Intraperitoneal injections of formalin as dilute as 1 to 1,000, caused peritonitis of a fibrino-hemorrhagic character. Formalin exercises a destructive action on all organs with which it comes in contact and causes inflammation in these organs. The lethal dose of formalin when injected intraperitoneally, into guinea-pigs, is approximately 2 c.c. of a 1 to 1,000 formalin for each 100 grams of body weight. The injection of formalin into the lungs was followed by pneumonia and bronchitis. The inflammation which follows subcutaneous injections of formalin is characterized by intense exudation. Injected into the muscles it produces myositis; injected into the anterior chamber of the eye, it causes accumulation of an exudate containing leucocytes and fibrin; and when dropped into the conjunctival sac, iritis follows and may be severe enough to destroy the eye. Formalin in whatever way introduced into the body is absorbed, and is then capable of producing lesions in the parenchymatous organs, such as cloudy swelling and focal necroses. The leucocytic infiltration which follows the introduction of formalin is characteristic. The eosinophiles are the first leucocytes to appear; these are followed by the other polynuclear leucocytes, the large and small mononuclear leucocytes being the last to appear. Animals subjected to chronic poisoning with formalin administered by intraperitoneal injection developed fibrinous peritonitis, associated with marked eosinophilia, cloudy swelling, fatty degeneration, focal necrosis and leucocytic infiltration in the kidneys and liver.

46. **Sodium Bicarbonate Infusions in Severe Hemorrhages.**—The results of experiments described by Dawson indicate that under certain conditions the addition of sodium bicarbonate to the infused fluid may be expected to have a beneficial action. In extreme cases of shock due to loss of blood, the addition of from 0.5 to 1 per cent. of the bicarbonate to the solution of 0.8 per cent. sodium chlorid may be of advantage in two respects. In the first place, the rise in all the pressures, especially in the diastolic pressure, is more pronounced than when the pure chlorid is used, and consequently, the circulation (as far as the pressures are concerned) can be restored more nearly to the normal condition; secondly, the quantity of fluid required is smaller than is the case with the pure chlorid, and hence the greater is the rapidity with which the solution can be hurried into the circulation, a matter of some importance in desperate cases. Dawson mentions one possibility which ought not to be overlooked in the employment of bicarbonate of soda—that of overworking the heart. Some experiments of a series not yet completed show that very strong solution of sodium carbonate and bicarbonate act as cardiac stimulants to an astounding degree. Therefore, it is the duty of the physician to decide in each case whether a cardiac stimulant is or is not contraindicated. Dawson considers it a rational procedure to begin an intravenous infusion with a solution containing bicarbonate, and in this way to hurry the pressures upward, so to speak, and then, when the pressures reach a considerable height, the bicarbonate might, if thought advisable, readily be omitted from subsequent infusions which might be required to maintain the pressure at the desired level.

Journal of the Michigan State Medical Society, Detroit.

March.

51 Physiologic Therapeutics in Gynecology. J. H. Kellogg, Battle Creek.
52 *Removal of Vermiform Appendix and Treatment of Stump. A. McLean, Detroit.
53 Tracheotomy. J. A. Heasley, Grand Rapids.
54 Cancer of the Rectum. J. A. McMillan, Detroit.
55 Case of Colitis with Treatment. F. H. Brown, Newaygo, Mich.

52. **Appendicectomy.**—McLean describes a method which he has used with very satisfactory results in over 75 cases. The appendix is freed from its mesentery back to near the base. A strong silk ligature is placed around the appendix at the

desired point, including all the coats, and tied very tightly. This constricts the appendix so as to form a prominent shoulder near the ligature. A purse-string catgut suture is inserted through the serosa well up on the shoulder and drawn taut; the appendix is then removed with scissors just below the silk ligature, while the purse-string suture is tightened. This brings the serous coat over the stump completely as the muscular and mucous coats roll in. The silk ligature compresses the lumen so as to force all secretions from this point, frequently obliterating the mucosa so that there is no danger of escape of secretion. He does not use acid or caustic of any kind on the stump, simply bringing up the meso-appendix and covering it over. There are no stitches through, or ligature around, the muscular coat.

Journal of Medical Research, Boston.

January.

56 *Contribution to the Classification of Tumors. F. B. Mallory, Boston.
57 *Nature of the Cell Inclusions of Cancer. R. B. Greenough, Boston.
58 *Effects of the Roentgen Ray on Cancer. R. H. Vose and W. C. Howe, Boston.
59 *Implantation of Tissue and Its Relation to Cancer. E. H. Nichols, Boston.

February.

60 Structure of Vaccine Bodies in Isolated Cells. J. Ewing, Ithaca, N. Y.
61 *Studies in Mammalian Tubercle. III. T. Smith, Boston.
62 *Typhoid Filtrates in the Treatment of Typhoid. N. W. Richardson, Boston.
63 Bacteriolytic Power of Normal Rabbit Serum. B. H. Buxton, New York City.
64 Mixed Tumors of the Lachrymal and Salivary Glands. F. H. Verhoeff, Boston.
65 Degrees of Susceptibility to Diphtheria Toxin Among Guinea-pigs. Transmission from Parents to Offspring. T. Smith, Boston.

56. **Classification of Tumors.**—This paper represents the beginning of an attempt at a classification of tumors based on a careful study of the histologic differentiation of their cells and intercellular substance. Mallory's report is the result of a study of three kinds of fibrils produced by normal and tumor cells, and of the bearing of these fibrils on the classification of the tumors contained in them. The three kinds of fibrils studied are the neuroglia fibrils of neuroglia cells, the myoglia fibrils of smooth muscle cells, and the fibro-glia fibrils of connective tissue cells. Mallory found that these fibrils more or less closely resemble one another morphologically and in certain staining reactions. In general, it may be said that the fibro-glia fibrils are the finest and the myo-glia fibrils the most sensitive to postmortem changes. In tumors which arise from neuroglia smooth muscle or connective tissue cells, the cells tend to differentiate in nucleus, cytoplasm and intercellular substances in the same way as do the corresponding normal cells, but the differentiation is most complete in those tumors which are growing most slowly. All tumors, no matter how slowly or how rapidly they are growing, in which the cells tend to differentiate alike in cell and in intracellular substance, should be included under one heading and treated as a definite entity in order that the common characteristics may be rendered prominent.

57. **Cell Inclusions of Cancer.**—The material forming the basis of Greenough's report comprises 63 specimens of tissue and a general review of the literature of the subject. The report may be summarized as follows: The typical cell inclusions of cancer are practically constant in cancer of glandular origin. They are not found in epithelioma, and are almost invariably absent in sarcoma. Their size, structure and staining reactions are such as to justify the assumption that they are vacuoles in the cell protoplasm containing a material which is coagulated and shrunken by the use of tissue fixatives. The occurrence of vacuoles of this nature is chiefly a phenomenon of cell secretion. Similar vacuoles may be produced, however, in certain cases by phagocytosis and by degeneration of the nucleus. Secretion vacuoles of the form of typical cancer cell inclusions are found in certain non-cancerous diseases of the mammary gland. In such cases, the secretion vacuole occupies a position between the nucleus and the lumen of the gland. In more advanced carcinoma, the gland lumen is lost. The secretion vacuole can not escape, and remains within the cancer cell to undergo further increase and ultimate degeneration. Cell secretion is a function which is lost in the progressive anaplasia of cancer cells, and cell inclusions are more frequent in slow-going cancer, and are less numerous in advanced cancer with rapid cell division. Greenough says that no reason exists for the interpretation of these appearances as of parasitic origin.

58. **Effects of Roentgen Ray on Cancer.**—Vose and Howe studied 120 cases with reference to the effect produced by the *x*-ray on cancer. A uniform technic was adopted so as to be reasonably certain of the uniformity of the results obtained. The effect on ulcerated surfaces at first was that of stimulation, as evidenced by the formation of granulations, but under continued exposure the epithelial edge is destroyed and healing is retarded. It is extremely difficult to decide at what point the beneficial influence ends. The effect on scar tissue is peculiar. Certain contracted and painful scars have softened and have become much more pliable with diminution of pain, although this is not an invariable effect nor can any histologic change be shown to explain it. Eighteen cases in which pain was marked were treated; of these, 9 patients were temporarily or permanently benefited, in some the benefit amounting to almost total relief; 5 others received a similar benefit when the brush discharge from a high-frequency machine was added, but the remaining 4 showed a distinct increase of pain, and at least 2 patients who had no pain at the start had pain later, and 2 patients complained bitterly of pain coming on after exposure and lasting from 24 to 48 hours. The observations made in cases of cancer showed that cutaneous cancer treated by the *x*-ray undergoes degeneration not peculiar to this form of treatment or distinguishable histologically from degeneration from other causes. The vascular changes are limited to an end-arteritis; new formation of blood vessels occurs if healing takes place, as in the process of repair elsewhere; there is an increase of elastic tissue. Taken as a whole, the clinical cases show that the only cure of cancer by the *x*-ray is by destruction and exfoliation. This at once limits its value to superficial cases. This destructive process is a slow one, and acts very superficially. Since it is well known that many essentially chronic superficial epidermoid cancers may be removed permanently by the slightest surgical procedure, that course seems preferable to the somewhat tedious treatment by the *x*-ray, and as they both may fail, an extensive surgical operation, if necessary, may be undertaken more promptly in the former case. Being non-selective in its action, the *x*-ray can not be used strongly enough to affect destruction of anything but the shallowest tumors without serious injury to the overlying and surrounding tissue, or, in other words, without producing such a burn as experience shows in all probability never would heal.

59. **Implanted Tissue and Its Relation to Cancer.**—The results of a series of implantations of tissue in 62 animals are presented by Nichols. For implantation both adult and fetal tissues were used. The implanted tissues were chiefly epithelial, although some mesenchymal tissues were used. The experiments were undertaken to see if epithelial or mesenchymal tissues, set free from their normal environment, could acquire a power of unlimited growth and give rise to the formation of metastases. Nichols' paper may be summarized as follows: Certain types of epithelium (epidermis), both adult and fetal, can be experimentally removed from their normal position and implanted into another part of the same animal, and under those circumstances can maintain their "potentiality of growth," retain their own peculiar character and produce nodules analogous to dermoid cysts or to more complicated teratoma. In no case has any epithelium of a highly differentiated function been seen to maintain its power of growth or to proliferate. The "potentiality of growth" is greater in the case of fetal than it is in that of adult tissues. In no case has any infiltration of surrounding tissue by the transplanted epithelium been seen, nor any tendency to epithelial metastases. Certain fetal connective tissues (cartilage)

can be transplanted in the same way as epithelial tissues, and retain their "potentiality of growth." Transplanted fetal tissues do not reproduce the stage of development at which they are transplanted, but tend to reproduce the ultimate stage of their normal development.

61. **Mammalian Tubercle Bacilli.**—In this paper, which is a second contribution on this subject, Smith describes a bovine bacillus obtained from a case of primary tuberculosis of the mesenteric glands of a child, and a culture test is given for distinguishing the human from the bovine type of bacillus. A thorough study of this case convinces Smith that his conception of a bovine and a human type of tubercle bacilli, introduced by him in 1898, is confirmed and still further defined, although this conception does not exclude that of intermediate types likely to be found in other species. He says that tubercle bacilli not distinguishable from the bovine type are occasionally encountered in the human subject. From their action on glycerin bouillon, mammalian tubercle bacilli may be divided into two groups—one corresponding to the human, the other to the bovine type. Mammals other than cattle are probably infected either from cattle or man, or from both sources.

62. **Typhoid Filtrates in Treatment of Typhoid.**—An experience with 22 cases of typhoid treated with the filtrate of a bouillon culture of the typhoid bacillus leads Richardson to express the hope that in this fluid we have an agent of therapeutic value. The filtrate of a typhoid bouillon culture grown for six weeks at the body temperature has little, if any, toxic power. Two c.c. injected intraperitoneally into guinea-pigs produce a certain amount of immunity, not only in the guinea-pig, but also (subcutaneously) in the human subject. Typhoid patients, on the contrary, may react quite sharply to such injections, the reactions being characterized by a chill, rise in temperature and increased frequency of pulse and respiration. This reaction has occurred at least once in one-half the cases thus treated. Experience thus far seems to show that the best results are to be obtained in cases not yet too severely damaged by the typhoid poison. The best conditions for the use of this treatment should be seen in cases of threatened relapse, and, perhaps, in the beginnings of the original disease when the natural immunity still unexhausted could be called on for extra exertions in crushing a nascent infection. Comparatively little good should be expected—indeed, harm might be done—if an individual already hyperintoxicated were subjected to the effects of an exaggerated destruction of bacilli. In Richardson's series of 22 cases there occurred 2 deaths, one from pulmonary embolism and one from hemorrhage, for which he does not hold the treatment in any way responsible. Most of the cases did not come under observation until the disease was well advanced. Five early cases were especially interesting as showing what seems to have been a shortening of the disease, the injections being begun on the seventh to the twelfth day, the temperature falling to normal on the twelfth to the twentieth day, that is, within from five to twelve days afterward.

Old Dominion Journal, Richmond.

February.

66 *Treatment of the Alimentary Canal Before and After Abdominal Section. I. S. Stone, Washington.
67 Metastasis from Cancers of the Breast. G. Baughman, Richmond.
68 Headaches and Eyestrain. C. M. Miller, Richmond.
69 *Small Point in Therapeutics. C. W. Astrop, Surry, Va.
70 Is Gynecology a Specialty? C. R. Robbins, Richmond.

66. **Preliminary and Postoperative Treatment of Abdominal Section.**—The evacuation of infectious fluids from the peritoneal cavity by purgation is condemned by Stone, and the suggestion is made that evacuants should be used instead of irritating chemical cathartics. The loss of serum caused by the latter is ill-borne at best, but is especially ennervating to very ill or feeble patients. Stone advises the omission of calomel and salts in the preliminary treatment, and advises relying on some bland laxative, such as castor oil, in the preparation of patients coming for abdominal section. When patients will not, or can not, take the oil, some one of the evacuants, such as senna, cascara, etc., may be used. An average of four bowel movements is usually all that is needed, and this result should be accomplished before 9 o'clock in the evening of the day previous to that of operation. The necessary enema should be given and repeated until the large bowel is practically empty. Patients so treated are more comfortable, they have less nausea and vomiting after operation, and less bowel distension, and normal peristalsis appears to return within a shorter period. Speaking of the postoperative treatment, Stone says the regulation of the diet and fluids given the patient is all important. Many patients receive liquid food until just before they take the anesthetic, because the bowels act with greater ease and peristalsis is readily restored when there is a small quantity of solid matter present. It is perfectly safe, and good practice to rely entirely on the use of enemas until the bowels act freely before any laxative is given. The rule not to give purgatives by mouth until after normal peristalsis has returned, seems to fill every indication in all classes of abdominal surgery.

69. **Small Point in Therapeutics.**—Astrop has found that the unpleasant cutaneous manifestations which in some persons follow the administration of quinin may be prevented by giving 15 drops of the tincture of belladonna or 1/60 of a grain of atropia with each dose of the quinin.

California State Journal of Medicine, San Francisco.

March.

71 Surgical Interference in Tuberculosis of the Bladder. (Continued.) G. MacGowan, Los Angeles.
72 Neurasthenia in Childhood. H. N. Rowell, Berkley.
73 Tumors of the Kidney—with Reported Cases. H. B. Reynolds, San Francisco.
74 Surgical Treatment of Chronic Tonsillitis. J. A. Black, San Francisco.
75 Effects of Tonsillotomy. W. B. Stephens, San Francisco.
76 Gonorrhea in Women. B. MacMonagle, San Francisco.
77 Manufacturing Pharmacists of the So-called Proprietary Remedies and the Medical Profession. W. H. Dukeman, Los Angeles.
78 Flies as Carriers of Contagion. G. H. Aiken, Fresno.
79 Sanitary Needs of the State. N. K. Foster, Sacramento.
80 Pertusis or Whooping Cough and Its Treatment. H. J. Ring, Ferndale.
81 Adenoids. E. A. Dial, Santa Barbara.

Journal of the Missouri State Medical Association, St. Louis.

January.

82 Treatment of Epilepsy. G. Campbell, St. Louis.
83 Scarlet Fever. R. D. Haire, Clinton, Mo.
84 Early Diagnosis of Pulmonary Tuberculosis. H. C. Shuttee, West Plains, Mo.

Louisville Monthly Journal of Medicine and Surgery.

March.

85 Round Ulcer of the Stomach. J. G. Cecil, Louisville.
86 Appendicitis. C. R. Garr, Flemingsburg, Ky.
87 Fate of the Glands of Bartholin in Perineorrhaphy. J. B. Bullitt, Louisville.
88 Some Observations on the Diagnosis and Treatment of Gallstones. A. Dixon, Henderson, Ky.
89 Report of a Case of Penetrating Gunshot Wound of the Abdomen. J. Y. Brown, St. Louis.

Medicine, Detroit.

March.

90 Notes on a Visit to the Laboratory and Hospital of Capt. E. R. Rost, I. M. S., the Discoverer of Leprolin. N. S. Rudolf, Simla, India.
91 Epilepsy. A. A. Eshner, Philadelphia.

Annals of Gynecology and Pediatry, Boston.

February.

92 Monism in Medicine. A. Jacobi, New York.
93 Sterilization of Cutting Instruments. H. A. Royster, Raleigh, N. C.

Northwestern Lancet, Minneapolis.

March 1.

94 Water Investigations in Minnesota. Collaboration of U. S. Geological Survey with Minnesota State Board of Health. F. F. Wesbrook and R. B. Dole, Minneapolis.
95 How to Secure Bony Union in Fractures of the Neck of the Femur. J. E. Moore, Minneapolis.

St. Paul Medical Journal.

March.

96 Dupuytren's Contraction of the Palmar Fascia. J. Knott, Dublin.
97 Commercial Value of Good Health, and the Indirect Cost of Unhygienic and Unsanitary Surroundings. H. A. Tomlinson, St. Peter, Minn.
98 Non-tuberculous Diseases of the Vertebræ. A. J. Gillette, St. Paul.
99 Procidentia and Its Relationship to Pelvic Surgery. A. MacLaren, St. Paul.
100 Pupil as an Aid in Diagnosis. J. H. James, Mankato, Minn.

Archives of Otology, New Rochelle, N. Y.

February.

101 Case of Temporo-sphenoidal Abscess, with Streptococcus Infection; Operation and Recovery. F. M. Stephens, New York.
102 Two Cases of Temporo-sphenoidal Abscess. Operation, Recovery. R. Lewis, Jr.
103 Three Cases of Laternal Sinus Thrombosis. R. Lewis, Jr.
104 Radical Operation in Chronic Middle-ear Suppuration. E. B. Dench, New York.
105 Double Mastoiditis, Followed by Diphtheritic Exudation with Fatal Result. H. Horlbeck, Columbia, S. C.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London.

February 25.

1 Multiple Disease of Joints in a Young Child. W. H. White.
2 *Acute Lymphemia in a Child. E. J. McWeeney and D. J. Farnan, Dublin.
3 *Id. E. J. McWeeney, Dublin.
4 Acute Lymphatic Leukemia. McCrae, Baltimore.
5 *Id. W. D. Donnan.
6 Microscopic Examination of Bone Marrow. C. P. Jones.
7 Clinical Methods of Enumerating Leucocytes. E. Turton.

2. **Acute Lymphemia.**—McWeeney and Farnan report a case of acute lymphemia occurring in a female child, 3 years of age, some time after an attack of whooping cough, the only illness, other than the lymphemia, the child had had. The blood count showed 1,540,000 red corpuscles and 136,400 white corpuscles. The percentages of white cells in the differential count were as follows: Large hyaline mononuclears, 65 per cent.; smaller hyaline mononuclears, 32 per cent.; polynuclear neutrophiles, 1.3 per cent.; polynuclear eosinophiles, 0.5 per cent.; neutrophile myelocytes, 0.6 per cent., and eosinophile myelocytes, 0.6 per cent. The hemoglobin was not estimated. The child died two days later. An autopsy was not permitted. Clinically the case resembled one of Hodgkin's disease, but an examination of a fresh blood preparation settled the diagnosis. The findings agreed with the hemocytic picture of acute leukemia in the following points: 1, Enormous preponderance of hyaline mononuclear cells; 2, rarity of polynuclear neutrophiles; 3, presence of myelocytes in very small numbers; 4, rarity of both varieties of nucleated red corpuscles.

3. **Id.**—A second case of acute lymphemia is reported by McWeeney. This case was typical in the youth of the patient (9 years), the duration of the disease (9 weeks), the moderate enlargement of the spleen and lymph glands; the clinical course, characterized by fever, hemorrhages and increased uric acid excretion; the predominance in the blood of large mononuclear cells with hyaline basophile protoplasm; the complete destruction or suppression of the myeloid element in the bone marrow, and the consequent total absence of granule cells from the blood. Exceptional features in the case were the severe and rapidly progressive anemia, the reds falling from 2,000,000 to 820,000 within three weeks; the large proportion of leucocytes to erythrocytes (5.3:1); the large number of lymphocytes (700,000), and the great enlargement of the spleen. In view of the abnormal activity of the lymphoid tissues throughout the body, and the flooding of the blood and tissues, with their products, the lymphocytes, McWeeney is inclined to regard acute leukemia as a primary disease of lymphoid tissue—a disease with distinct affinities to the malignant tumors.

5. **Id.**—The points of interest in the case reported by Donnan were: 1, The complete absence of any palpable lymphatic enlargement, coupled with a moderate amount of splenic hyperplasia; 2, the exceedingly rapid course, six weeks, with acute symptoms coming on only six days before death; 3, profound anemia; 4, the presence of a purpuric eruption on the body as virtually the only sign for several weeks. The acute symptoms were initiated by a severe attack of epistaxis.

The Lancet, London.

February 25.

8 Peritonitis. A Bacteriologic Study. L. S. Dudgeon and P. W. G. Sargent.
9 Shifting Dullness and Its Importance in Connection with Surgical Diseases. R. J. Godlee, London.
10 *Peculiar Form of Chronic Hyperplasia of the Mucous Membranes of the Upper Respiratory Tract. F. Semon.
11 Pneumonia with Infective Endocarditis and Meningitis. D. M. Livingstone and A. Jubb, Glasgow.
12 *Acute Septicemia Treated with Antistreptococcic Serum; Recovery. G. H. Cressey.
13 Mental Symptoms Associated with Heart Disease. H. Kerr.
14 *Properitoneal or Abdominal Hydrocele. J. Lewtas.
15 *Total Enucleation of the Prostate in Advanced Old Age. P. J. Freyer, London.
16 *Enelectrolysis; an Improved Method of Operating on Superfluous Hairs. B. Squire.
17 Laceration of the Abdominal Wall the Result of Bear-bite Simulating an Abdominal Tumor. V. S. Umachigi.

10. **Chronic Hyperplasia of Respiratory Mucous Membranes.**—Semon reports 7 cases of a hitherto apparently undescribed form of chronic hyperplasia of the mucous membranes of the nasopharynx, pharynx and larynx. Although there was some similarity in the clinical appearances of all these cases, the cause of the peculiar swelling was in 3 cases determined to be tuberculosis, syphilis or acute septic infection. The remaining 4 cases were not associated, so far as could be judged, with the presence of any specific micro-organism. The mucous membrane involved is uniformly thickened and presents a peculiar yellowish, shiny, somewhat gelatinous looking appearance, resembling that of a lardaceous kidney. The condition shows no tendency toward a destructive metamorphosis. Treatment is of no avail. Microscopically the condition presents itself as a chronic hyperplasia of the interstitial tissue of the parts involved, of apparently progressive character, with no tendency toward degeneration, and unassociated with the presence of any specific micro-organism. The investing epithelium is everywhere intact and normal. The lesion presents none of the structural features of tuberculosis, syphilis or rhinoscleroma. The overgrowth of connective tissue has no relationship with a neurofibromatous pachydermia since the nerves are not involved in the general fibromatosis. The enlargement is not due to a dilatation of lymph spaces, nor does it bear relegating to the group of angioneurotic edemas. The complete absence of chronic arterial change removes any relationship between the disease and erythromelalgia. The histologic changes approach most nearly to those met with in hyperplastic rhinitis in what has been called its secondary stage.

12. **Antistreptococcic Serum in Acute Septicemia.**—The infection in this case followed an injury of the great toe. The symptoms of acute sepsis developed rapidly, the temperature running as high as 105 and the pulse 106. On the eighth day 20 cm. of antistreptococcic serum were given hypodermically and within one hour the temperature had fallen 3½ degrees. On the following day 10 c.c. of serum were injected, this dose being repeated on the next day. In fact, during this period of acute sepsis the antistreptococcic serum was used pretty regularly until the skin became exquisitely tender. The case was complicated by the formation of superficial abscesses, a pleural pneumonia and an empyema. Convalescence was rapid and uneventful.

14. **Abdominal Hydrocele.**—Lewtas reports the case of a man, aged 38, who was suffering from what appeared to be a reducible inguinal hernia on the right side. The usual incision was made and on reaching the sac it seemed darker than usual and was obviously distended with fluid. A pale, clear, straw-colored fluid was evacuated, but continued to flow until the amount far exceeded the capacity of the sac. The flow ceased when two and a half pints had escaped. Neither intestine nor omentum were found in the canal, and on passing the finger through the ring nothing could be felt except the sides of a smooth-walled cavity, the limits of which could not be reached. The handle of a retractor entered for a distance of about 10 inches in directions radiating outward and inward from the internal ring. The left index finger pushed into the sac, while pressure was made on the abdomen with the other hand, could feel the under surface of the liver and of the umbilicus. This large cavity communicated at the internal ring with the sac outside, which extended to about an inch beyond the external ring, where it ended in a blind pouch. This extra-abdominal sac was separated from its connections and cut off close to the internal ring. A gauze drain was passed

through the internal ring into the sac within the abdomen, and the skin incision was then closed. The sac did not fill again, and at the end of a month it was obliterated.

15. **Enucleation of Prostate in Advanced Age.**—Freyer has performed his operation of total enucleation of the prostate on 188 patients, 9 of whom were octogenarians and one bordering on this period of life, aged 79 years. Nine of them are alive at the present time, most of them in excellent health, and all able to retain and to pass urine normally. The remaining patient, in whom the prostate was carcinomatous, after complete recovery from the operation, died suddenly from heart disease. From these facts Freyer concludes that age has little influence on the results of the operation, provided that the vital organs (particularly the kidneys) are unaffected or fairly sound. Nevertheless the operation should not be undertaken in such cases unless the most careful and tender nursing is available as well as the constant supervision of the surgeon.

16. **Enelectrolysis.**—The usual method of removing hair by electrolysis has been improved on by Squire. He pulls out the hair first and then passes the needle into the hole left by the extraction of the hair. This renders the destruction of the skin, that necessarily accompanies the destruction of the papilla, very much less, and in consequence the scarring left after the operation is not very noticeable. One very important advantage of the method is that it makes the procedure much more expeditious, and another is that the pain caused by the introduction of the needle is notably less. The needle enters the skin with the greatest ease. It does not in the least push the skin before it, and it does not displace the skin laterally. The introduction of the needle is more expeditious and it passes directly through the papilla and not to one side of it. A much greater number of hairs can be operated on in a given time. Squire advises using the butt end of the needle because it is less apt to stick and to get caught in the walls of the follicles.

Bulletin de l'Académie de Médecine, Paris.

18 (Year LXIX, No. 6, February.) *Pylorospasme avec hypersécretion et tétanie; étude clinique et expérimentale. T. Jonnesco and J. Grossman (Bucharest).
19 Sur la fréquence de la distomatose hépatique au Tonkin. Kermorgant.

18. **Spasm of the Pylorus with Hypersecretion and Tetany.**—Lancereaux, in presenting this communication from Jonnesco, stated that about 40 cases of gastric tetany are known, including one personally observed and one reported by Jonnesco. In the 11 cases in which operative treatment was undertaken, 8 patients were permanently cured, and 3 succumbed to postoperative peritoneal complications. In every known instance of gastric tetany, there was always some mechanical obstacle to the evacuation of the stomach. The stenosis is evidently primary, and it entails dilatation of the stomach and hypertrophy of its membranes. The vomiting and peristalsis indicate stenosis of the pylorus, and all doubt is removed when tetany is superadded. The tetany generally develops at an advanced stage of the affection. It is localized in the muscles of the feet and hands, but sometimes extends to the limbs and jaws; in exceptional cases it may extend to the trunk. Neuropathic atony of the stomach is sometimes the cause of abundant vomiting, but there is no peristalsis nor tetany, and restriction to a milk diet will generally put an end to the disturbances for the time being. The patient succumbed to progressive tetany in Lancereaux's case, unoperated on, but the one reported in detail by Jonnesco was entirely cured by posterior transmesocolic gastroenterostomy. Two phases were marked in this case: in the first there was permanent hyperchlorhydria with stasis of the food and consequent fermentation. The hyperacidity became so intense at times that the irritation of the duodenum induced a reflex spasm which prevented the invasion of the intestines by the irritating chyle. Lavage of the stomach restored conditions apparently to normal for a time. In the second phase, hypersecretion became superposed on the hyperchlorhydria, and tetany developed, probably from dehydration. The tetany did not appear except after great losses of fluid either in vomiting or in diarrhea, and it invariably subsided when fluid was introduced into the organism, by injection or otherwise.

Semaine Médicale, Paris.

20 (XXV, No. 6, February 8.) *Les interventions chirurgicales en face des nouvelles données de la physiologie et de la pathologie générale. A. Charrin.
21 *La néphrite hypogénétique. V. Babes (Bucharest).
22 (No. 7.) *Foreign Bodies in Esophagus of Children.—De la conduite à tenir dans les cas de corps étranger de l'esophage chez l'enfant. L. Bérard and R. Leriche.

20. **Surgery in Light of Latest Physiologic Data.**—Charrin reviews the information learned of late in regard to the functions of the omentum, spleen, ovaries and other organs, suggesting that their removal is not such a simple, harmless matter as has hitherto been supposed. Physicians should examine, weigh, ponder and watch the results for years instead of merely for a few months, to learn whether, in the mania for operating, everything really is for the best. Results are liable to develop tardily, showing that the apparent gain from the operation at first is outweighed by the ultimate harm. Surgery, he thinks, should yield more deference to general pathology and physiology. He cites a case in which the total ablation of a large mass of bleeding hemorrhoids in an otherwise healthy patient was followed by fatal arteriosclerosis with death in eighteen months. His own research has shown that the intestine should be regarded as a chain of juxtaposed organs with varying functions. He has also noted that if the spleen is removed from an animal with a biliary fistula, the bile at once loses its bright color and the dry residue decreases in amount, both in mineral and organic elements. He is also convinced that when a walled-off lesion, such as a tuberculous gland, is removed, its toxins and germs are liable to be launched into the general circulation and serious mischief follows. If the lesion had been left alone it might have persisted indefinitely in its harmless latent state.

21. **"Hypogenetic Nephritis."**—Babes has coined this term as descriptive of what he believes to be a hitherto undescribed form of nephritis. He has encountered 6 cases of it during the last three years. The subjects were all young, under 30, debilitated and anemic; they were free from kidney disturbances or were suffering merely from occasional slight disturbances of renal origin. During the course of some insignificant sickness, bronchitis, grippe or limited pneumonia, symptoms of subacute uremia suddenly developed and the patients sank into coma, which proved fatal the same day, or within two or three days. The autopsy findings indicated that the kidneys were congenitally undeveloped, unusually small, and the ureters and arteries were extra narrow. The heart was generally enlarged. The kidneys had evidently been taxed to the utmost by the demands of ordinary life, and the extra demands of even a comparatively trifling sickness had proved too much for them.

22. **Extraction of Foreign Bodies from the Esophagus.**—This article by Bérard and Leriche discusses what is best to be done when a foreign body has been swallowed by a child and has lodged in the esophagus. Extraction with forceps by the natural route is permissible only if the finger can reach the foreign body and if the process of extraction can be under the supervision of the laryngeal mirror. Attempts to push the foreign body down into the stomach are permissible only when it is soft and small, and is of a nature to be acted on by the digestive juices without causing poisoning. Attempts to remove the foreign body with the Graefe extractor should be absolutely rejected, as fatal accidents may occur. Extraction through the esophagoscope is the procedure of the future, but it is not within the reach of every practitioner. Consequently, the most certain and the least dangerous method for ordinary cases is external esophagotomy with suture of the muscularis and temporary drainage at the lowest point of the wound, bearing in mind that the foreign body in a child usually lodges just behind and a little above the notch in the sternum. Esophagotomy has frequently been followed by bronchopneumonia in the cases on record, but this was due to the preexisting inflammation set up by the foreign body, and can be avoided by early intervention.

Archiv f. klinische Chirurgie, Langenbeck's, Berlin.

Last indexed page 166.

23 (LXXV, No. 1.) Total Exstirpation der Scapula, Knochen-Regeneration und spätere Function (unter bes. Berücksichtigung der Osteomyelitis scapulæ). P. Bockenheimer.
24 Zur Operation eitriger Adnexerkrankungen durch ventrale Laparotomie (suppurative annexitis). Amberger.
25 Apparatus for Exact Dosage of Mixed Anesthetics.—Misch-Narkosen mit genauer Dosirung der Dampf-Concentration. Kionka and Kroenig (Jena). Illustrated.
26 *Zur Serum-Behandlung des Starrkrampfes insb. über Tetanus-Erkrankungen trotz prophylaktischer Serumtherapie. F. A. Suter.
27 *Experimentelle Studien über Lumbal-Anesthesie. R. Klapp.
28 Ueber Saugpumpen-Drainage bei Pankreas-Cyste (siphon drainage). R. Burmeister.
29 (No. 2.) *Zur Resection des carcinomatösen Magens (stomach). G. Kelling.
30 Simultaneous Stenosis of Pylorus and Intestine.—Ueber gleichzeitige Stenosierung von Pylorus und Darm. E. Payr. (Concluded.)
31 *Beitrag zum Studium der Harn- und Gallensteine (urinary and gallstones). G. Fantino. (Concluded.)
32 *Klinische und anatomische, sowie experimentelle Beiträge zur Kenntniss der inguinalen und cruralen Blasenhernien (hernia of bladder). F. Karewski.
33 Ueber Ovarial-Hernien. H. Heegaard.
34 Ueber die Madelungsche Deformität der Hand. K. Poulsen. See abstract on page 915.
35 Congenitale halbseitige Gesichtshypertrophie (unilateral hypertrophy of face). R. Werner.
36 Tumors in the Palate.—Ueber Gaumengeschwülste. H. H. Coenen.

26. **Serum Treatment of Tetanus.**—Fourteen cases of tetanus have been treated at Geneva. Only 2 were saved. The few cases treated with prophylactic injection of serum ran a milder course, and 83.3 per cent. of this group were saved. Suter urges the use of the serum as a prophylactic in circumstances suggesting possible danger, that is, before operation or childbirth. The physician who first sees a wound that threatens tetanus should inject the serum without delay. If given in time, the serum seems to be able to prevent the development of the infection.

27. **Lumbar Anesthesia.**—Klapp's experiments on dogs showed that the addition of oil to the solution of cocain entirely abolished all symptoms of intoxication. When the cocain was in an oily vehicle, total anesthesia could be induced in the dog without the slightest symptoms of intoxication. The capillaries and lymphatics are probably unable to take up the emulsion as rapidly as in an aqueous solution, and hence the cocain remains longer at the point of injection and is very slowly absorbed. Glycerin also retards absorption.

29. **Resection of Cancerous Stomach.**—Kelling says only 1 patient survived out of 6 cases of cancer of the stomach in which no hydrochloric or lactic acid could be detected in the stomach content. Five patients survived in 6 cases in which lactic acid was present, and 17 survived out of 20 presenting free hydrochloric acid. The prognosis is, therefore, better in the latter class, probably for the reason that hydrochloric and lactic acid have a certain disinfecting power. In his total experience with 54 cases treated by resection of the stomach he became impressed with the great frequency of postoperative pneumonia as compared with other laparotomies. This is easily explained by the passage of bacteria through the readily permeable central tendon of the diaphragm, when the space below the diaphragm becomes infected, during the course of the operation or afterward. Embolic pneumonia follows. Infection may be due to bacteria in the air, entering during the operation, and the nervous influences disturbed by operations in the region of the epigastrium may co-operate in the morbid process by interfering with the circulation. Kelling varied the technic of resection and total removal of the stomach, hoping to devise some means to avoid these complications, and the results seemed better with an operation in two sittings. He thinks that many of the supposed recurrences are in reality new infections. The main point for the surgeon is to have the condition diagnosed early.

31. **Urinary Calculi and Gallstones.**—Fantino reports 4 deaths in 110 cases of urinary calculi in which an operation was undertaken. His total experience includes 160 cases of calculi. He sutures the bladder after suprapubic incision in case of aseptic urine or slight cystitis, draining the prevesical space and leaving a catheter permanently in place. In severe cystitis he drains the bladder. The oxalate stones always cast sharp shadows in radioscopy, the urates variably sharp or faint shadows. Calcium phosphates give better shadows than ammonium and magnesium phosphate stones. Radioscopy of urinary calculi can be depended on; it failed in only 2 out of 120 cases. Negative findings in case of kidney stones do not absolutely exclude their presence. Gallstones generally cast fainter shadows than liver and muscle, but when they contain considerable lime salts they are liable to cast sharp shadows. These assertions are based on the findings in 80 radiographs of stones during life; 72 in the bladder, 4 in the kidneys and 4 in the urethra. The details of his extensive experience are related in full.

32. **Hernia of the Bladder.**—Karewski was able to diagnose with the cystoscope the existence of hernia of the bladder in 2 out of the 5 cases which he reports. In another case the condition was diagnosed, but in the others it was first discovered at the operation or afterward. He describes the mechanism of hernia of the bladder as he studied it further on cadavers.

Berliner klinische Wochenschrift.

37 (XLII, No. 4, January 23.) Zur Finsen-Behandlung des Lupus. E. Lesser.
38 Die Echinococcus-Krankheit des Auges (of eye). R. Greeff.
39 *Local Action of Suprarenal Substance, etc., on Circulation.—Die örtliche Einwirkung von Nebennierensubstanz, Brenzkatechin und Spermin auf die Zirkulation. J. Baum.
40 Encephalomyelitis hämorrhagica disseminata acuta unter dem Bilde der aufsteigenden Spinalparalyse (simulating ascending spinal paralysis). L. Huismans.
41 Cure of Two Cases of Exophthalmus and One of Chorea by Removal of Adenoid Vegetations.—Heilung zweier Fälle von Exophthalmus bilateralis und eines Falles von Chorea durch Entfernung der adenoiden Vegetationen. B. Holz (Berlin).
42 *Campher und Digitalis. Th. A. Maass.

39. **New Research on Suprarenal and Allied Substances.**—Baum writes from Neisser's clinic at Breslau to report the results of comparative tests of the active principles of the suprarenals and testicles. He found that the latter has exactly the contrary effect to the former. It induces a rapid and intense hyperemia instead of the anemia observed with adrenalin. Its effect is very transient, not lasting more than a minute in his tests on frogs. His researches further emphasize the value of adrenalin as a means to detect imperceptible fissures in the skin. It remains inert, without displaying any action, when the skin is absolutely intact, but if there is any defect its characteristic action is at once exerted. The action of suprarenal substance on the blood vessels is more pronounced, the nearer they are to normal. It is incomplete in proportion to the extent of the destructive process in the vessels and its long standing. Consequently, suprarenal substance displays its greatest activity in acute inflammations while lupous tissues or chronically dilated vessels are not much affected. The difference is still more marked in the after-effect. The nearer to normal the tissues, the more promptly the action of the suprarenal substance subsides afterward, while in chronic vascular lesions intense venous hyperemia follows and persists for some time. This is also observed when the suprarenal substance is applied repeatedly to the same spot. The primary anemia is followed by constantly increasing, transient venous hyperemia. The vessels evidently become fatigued by its application. Baum thinks that these findings indicate that the use of the suprarenal substance should be restricted to tissues that are approximately normal, and that it should never be long continued. His tests were made on the web foot or tongue of curarized frogs. The surface was first rubbed lightly with emery paper and then brushed with a 1 to 10 per cent. solution of the substance to be tested.

42. **Camphor and Digitalis.**—Maass epitomizes the results of recent researches which have provided a scientific basis for empiric observation on the action of these drugs. Camphor, he states, was known and used by physicians as early as 1070, the Arabian physician, Simon Seth, and the abbess Hildegard, writing of its remarkable properties in 1070 and 1150, respectively. Recent experiments with the isolated hearts of warm-blooded animals have thrown new light on its

mode of action, especially those of Gottlieb in 1901, Winterberg since then, and E. Seligmann still more recently. When the isolated beating heart commences to beat irregularly and wildly, the regular rhythm can be restored by adding a little camphor to the fluid being passed through it. The principal action of the drug, however, is in dilating the blood vessels. When injected into the circulation it exerts a slight, transient irritation on the vasomotor center. Similar researches with digitalis have shown that it acts directly on the heart with a further reflex action of constriction of the vessels in the splanchnic area. Digitalis also regulates the pulse. It shares this latter property with camphor.

Centralblatt f. Chirurgie, Leipsic.

Last indexed pages 664 and 747.

43 (XXXII, No. 5, February 4.) *Rectus Muscle and Direct Inguinal Hernia.—Die mediale Leistenbruchpforte und der gerade Bauchmuskel. H. Landau.
44 (No. 6.) Gritttl'sche Amputation. W. Harms.
45 Simple Contrivance for Active Movements.—Einfache Stellvorrichtung für aktive Bewegungsapparate. A. Wodarz.
46 (No. 7.) Zur Technik des Gipsbettes (plaster bed). M. Haudek.
47 Ileus as Tardy Consequence of Appendicitis.—Ileus als Spätfolge von Appendicitis. V. Subbotitch.

43. **Automatic Correction of Inguinal Hernia.**—Landau comments on the looseness of the parts around a direct inguinal hernia. The tissues seem to be merely connective tissue, with the exception of the rectus. When at rest, the lateral margin of the rectus coincides with the aponeurosis, but when it contracts it spreads and becomes a centimeter wider, thus covering the entire mouth of the hernial sac. One would suppose that the contracting rectus would interpose a barrier to the protrusion of the hernia, as it is forced out by the pressure of the diaphragm and abdominal muscles. This is not the case, however, for the reason that the rectus behaves passively during the inspiration which is involuntarily made as a preliminary to exerting pressure. The rectus does not contract; it is merely drawn up passively, leaving the opening unprotected. On the other hand, if pressure is exerted during expiration, the rectus contracts and its lower portion spreads wide like a protecting wall over the ring during the entire period of the contraction. The disposition to hernia is further combated by the shape assumed by the abdomen during inspiration and expiration. Hernia is much more liable to occur during inspiration. Pressure, especially for violent exertion, is more commonly exerted during inspiration. The deep inspiration provides oxygen for the moment when the body makes its muscles work without a fresh supply of oxygen. The arms can do better work, as the muscles then have a firmer hold on the inflated thorax than when it subsides during expiration. Every one who has an unusually wide inguinal ring, or an incipient hernia, should seek to reverse this custom, and learn to use his muscles during expiration. The impulse to contract the muscles as much as possible at every exertion, when straining, coughing or sneezing, will soon become second nature if diligently practiced, and thus the region will be automatically protected against hernia. Landau is convinced that if a person with a tendency to hernia will practice and will accustom himself to this reversal of the usual conditions, he can keep his hernia permanently under control, without necessity for operation or truss.

Centralblatt f. Gynäkologie, Leipsic.

Last indexed page 747.

48 (XXIX, No. 5, February 4.) Fate of Deported Placenta Cells.—Ueber das Schicksal embolisch verschleppter Placentarzellen. G. Schmorl.
49 Hearing of Fetal Heart Sounds Before Middle of Pregnancy —Zur Frage der Wahrnehmung von Herztönen vor der Mitte der Schwangerschaft. O. v. Herff. See abstract page 915.
50 Konvulsionen nephrektomierter Kaninchen (rabbits). B. Wolff.
51 (No. 6.) Zur Technik der Alexander-Adams'schen Operation. H. Fehling.
52 *Zur Prophylaxe des Puerperal-Fiebers. B. Credé (Dresden).
53 Sectio caesarea wegen retrocervicalen Myomes mit Total-Exstirpation des Uterus. F. Michel.
54 Researches on Isolated Uterus or Vagina.—Bemerkung zu den Arbeiten von Dr. E. M. Kurdinowski über physiologische und pharmakologische Versuche an der isolierten Gebärmutter. A. Labhardt (Basle). See abstract in THE JOURNAL, xliii, p. 1586.
55 Zur Anatomie der Atmokausis. G. Fleischmann.
56 (No. 7.) Shape of Infants' Skulls Modified by Hard or Soft Pillows.—Ueber die Entstehung von Brachy- und Dolichocephalie durch willkürliche Beeinflussung des kindlichen Schädels. G. Walcher.
57 Der Bacillus aerogenes capsulatus im Puerperalfieber (In 10 cases of puerperal infection). H. M. Little (Baltimore).

52. **Prevention of Puerperal Fever.**—Credé thinks that it is just as important to sterilize the internal genitals after childbirth as it is to instill the prophylactic silver solution in the eyes of the newly born child. Conditions, of course, are much simpler in the case of the child's eyes, but the principle of prevention of development of lurking germs is the same. He regards Zweifel's idea as to the evacuation of all blood clots as a very fortunate one (see THE JOURNAL, page 763, of last volume). Extensive experience has convinced him that collargol is perfectly harmless for the purpose, and is a powerful antiseptic and catalytic remedy which kills or attenuates the germs in the uterus or vagina. If systematically used, it would greatly reduce the number of deaths from puerperal fever, which still average 6,000 to 7,000 every year throughout the German Empire. He introduces the collargol in the form of a suppository pushed high into the vagina or cervix or into the uterine cavity after delivery, the opening into the vagina then being loosely tamponed with gauze. The formula for this "collargol-vaginal ball," as he calls it, is:

℞ Collargol
Talc. pulv., āā.....grs. xv 1
Olei cacao 3ivss 18
M. Ft. globuli No. x.

The suppository and gauze can be renewed at need. The collargol penetrates into every crevice, sterilizes the secretions without injuring the living cells, and, to some extent, is absorbed. Even if infection be already present, it is attenuated, but, in this case, more energetic measures are necessary. He irrigates with a 1 to 2,000 or 5,000 solution of collargol, introducing a suppository to act during the intervals, with other measures as indicated, using as the last resource intravenous injections of 8 to 10 c.c. of a 2 per cent. solution of collargol.

Deutsches Archiv f. klinische Medicin, Leipsic.

Last indexed page 834.

58 (LXXXII, Nos. 1-2.) Modifications in Shape, Size and Position of Heart in Changing from Horizontal to Upright Position.—Ueber Veränderungen in der Form, Grösse und Lage des Herzens beim Uebergang aus horizontaler in vertikale Korperstellung. Methodik der Orthodiagraphie. F. Moritz (Greifswald).
59 Origin of Blood Plates and Their Relations to Spindle Cells. —Entstehung der Blutplättchen und ihre Beziehungen zu den Spindelcellen. E. Helber (Tübingen).
60 *Ueber das Verhalten der Langerhansschen Inseln des Pankreas bei Diabetes mellitus. K. L. Karakascheff.
61 *Meningismus typhosus und Meningotyphus. C. Stäubli.
62 Ein Fall von akuter, einfacher Meningoencephalitis. C. Hegler and E. Helber.
63 Conduction of Heart and Vessel Murmurs in Thorax.—Ueber die Fortleitung von Herz- und Gefässgeräuschen im Thorax. C. Klieneberger.
64 Zur Kenntnis der multiplen Sklerose. P. Morawitz.
65 *Tuberkulöse Prozesse und Lymphocyten. C. J. Fauconett.
66 Fall von primärem Lebersarkom mit Cirrhose der Leber (of liver). J. Rubinato.
67 Intermittierende Polyurie usw. bei Addisonscher Krankheit. E. Bendix.
68 Topography of Warmth Production.—Wärmetopographie des Warmblüters. E. Aronsohn. Reply to article in vol. lxxv.

60. **Islands of Langerhans in Eleven Cases of Diabetes.**—The entire parenchyma of the pancreas was more or less degenerated in all the cases reported, but the islands of Langerhans, for the most part, were normal. In some instances they had evidently proliferated. This proliferation and the general aspect of the islands suggested vicarious action on their part and regeneration of the acini from these islands. The patient may escape diabetes when the acini are alone involved and the islands are spared by the morbid process. Normal parenchyma may regenerate from the islands; they can be regarded as reservoirs which, under certain conditions, may compensate for the destroyed parenchyma.

61. **Typhoid Meningismus and Meningo-Typhoid.**—Stäubli has observed 2 cases at Munich in which the symptoms suggested typhoid complicated by meningitis, but lumbar puncture was negative. The patients recovered and the course

of the disease, in both cases, indicated that the disturbance was functional and due to intoxication from the products of the bacteria. In a third case the typhoid bacilli had evidently located in the meninges and induced a suppurative cerebrospinal meningitis. The case had been one of "walking typhoid"; the cerebrospinal symptoms were first noted after a month of slight headache and general exhaustion in a previously healthy young man.

65. **Tuberculous Processes and Lymphocytes.**—Fauconnet's researches demonstrate that the tuberculosis toxin attracts only the polynuclear neutrophile cells, not the lymphocytes. The latter are attracted only locally by tuberculous processes.

Deutsche medicinische Wochenschrift, Berlin and Leipsic.

69 (XXXI, No. 4, January 26.) *Venous Congestion in Treatment.—Ueber Behandlung durch venöse Stauung. H. Tillmanns.
70 *Zur Diagnostik und Therapie der Nierentuberculose (of kidney). L. Casper. (Commenced in No. 3.)
71 *Wearing Out of Nerves.—Die Aufbrauchkrankheiten des Nervensystems. L. Edinger. (Concluded.)
72 Facial Paralys's.—Zur Symptomatologie der doppelseitigen Facialislähmung. E. Barth.
73 Chorion-Epitheliom und Luteïn-Cysten. G. Fischer.
74 Action of Albuminoids, etc., on Coagulation of Blood.—Ueber die Einwirkung von Eiweisskörpern, Peptonen und Peptiden auf die Blutgerinnung. H. Brat.
75 *Possibility of Transmission of Disease Germs by Common Communion Cup.—Untersuchungen über die Möglichkeit der Uebertragung von Krankheitserregern durch den gemeinsamen Abendmahlskelch nebst Bemerkungen über die Wahrscheinlichkeit solcher Uebertragung und Vorschlagen zu ihrer Vermeidung. O. Roepke.

69. **Venous Congestion as a Therapeutic Measure.**—Tillmanns urges more general adoption of the method of local venous congestion as a powerful means of influencing mild cases of tuberculosis of the joints, acute or subacute gonorrheal joint affections and chronic stiff joints. When resorption is to be promoted, active hyperemia is preferable. He adds that in all acute inflammations of the soft parts venous congestion is contraindicated.

70. **Diagnosis and Treatment of Tuberculosis of the Kidney.**—Casper has noticed that patients with operable tuberculosis of the kidney, who refuse an operation, generally succumb sooner or later to the progressive course of the affection. Infection of other organs from the kidney is by no means rare, especially of the other kidney. The patients may remain in comparative health for a year or ten years, and in 3 out of his 60 cases of tuberculosis of the kidney the process actually seems to have healed, as there are no further symptoms. If insignificant hematuria is the only symptom and no pus cells are found in the urine, the operation can be deferred, if the patient realizes the exceptional character of a favorable outcome. Only 3 cases of even comparative recovery are on record to 15 in which the tuberculous process continued to spread. The presence of pus cells urgently indicates an operation. Great debility and general ill health are no contraindications to operative interference, if they are referable to the local kidney process alone. Diabetes renders the prognosis graver. One of the 2 deaths in Casper's experience after removal of a tuberculous kidney was in a very mild case of diabetes. The sugar was reduced to normal on a diabetic diet and the patient was well nourished, but he succumbed to increasing weakness in less than two months. The proportion of sugar rose alarmingly after the operation and acetic acid also appeared in the urine. Review of the literature shows that the fatalities after nephrectomy were almost always due to heart weakness which emphasizes the value of a strong heart for the success of a contemplated nephrectomy. A high degree of arteriosclerosis, especially of the coronaries, would, of course, forbid operation, but Casper has never accepted mere functional heart weakness as a contraindication. Tuberculosis of the bladder always improves after nephrectomy, and may be permanently arrested. Bladder tuberculosis is generally a strictly localized affection, with little tendency to spread or to become generalized. He has 2 patients who have had such a process for ten years. It occasionally has an exacerbation, but then subsides into latency for years at a time. An early diagnosis and determination of the soundness of the other kidney are the bases for successful treatment of tuberculosis of the kidney. Since the functional kidney tests have been introduced, the statistics of five different surgeons show 130 nephrectomies with a mortality of 10 per cent. in the first six months. The record before catheterization of the ureters was 139 nephrectomies, with 21.7 per cent. mortality in the first six months. Albarran's experience has been 3.7 mortality in 53 nephrectomies; Rotter's, 25 per cent. in 8; Casper's, 10 per cent. in 20; Kümmell's, 14.3 per cent. in 42 nephrectomies, and Barth's 14.3 per cent. in 7. Comparison of the statistics further shows that in the days before the functional tests, 22.7 per cent. of the 28 deaths after nephrectomy were due to insufficiency of the remaining kidney. This only occurred in a single one of the 13 deaths in the statistics of the last few years, that is, in 7.7 per cent.

71. **Wearing Out of Nerves Without Normal Repair.**—The conclusions of Edinger's series of articles on this subject contain some practical hints. (See previous abstracts, pages 1588 and 1909 of last volume.) He accepts three types of these affections—those that are due to excessive functional demands on normal nerve tracts, those due to lack of normal repair in certain tracts, from the influence of some intoxication, and those due to inherited weakness or predisposition. The practical conclusion is that nerve tracts predisposed by intoxications, by excessive functioning or by inherited weakness should be protected from undue strain. He has found that tabetics can be guarded against many manifestations of the disease by refraining from fatiguing exercise, by urinating every hour, by wearing colored glasses in bright sunlight, and by remaining in bed for a few days whenever the symptoms show signs of aggravation. Paralysis of the bladder has not developed in any of his patients who obeyed these rules, but overexertion is liable at times to induce some symptoms. In polyneuritis, strict rest in bed, and in mononeuritis, a removable immobilizing bandage have given most gratifying results. Paralysis after long illness can be averted by avoidance of overvigorous or of long-continued movements.

75. **The Individual Communion Cup.**—This article is an appeal for individual communion cups as a special necessity in watering places, sanatoria and similar places. The solution of the question seems to be that each communicant should have his own private communion cup which he keeps in his own possession and takes to church with his prayer book. The results of the writer's experimental tests showed that turning the cup and wiping the rim with a napkin are not sufficient to protect against infection. They refer to 2 authentic unpublished cases in which syphilis was unmistakably transmitted from one person to another by the use of a common drinking glass in a saloon.

Münchener medicinische Wochenschrift.

76 (LII, No. 6, February 7.) *Action of Mountain Climate on the Blood.—Die Wirkungen des Höhenklimas auf das Blut. K. Bürker.
77 *Eosinophilia in Ankylostomiasis.—Die Vermehrung der eosinophilen Leukozyten bei Ankylostomiasis in diagnostisch-prophylaktischer Bedeutung. H. Bruns, Llefmann and Mäckel.
78 *The Presumptive Dangers and the Positive Advantages of Artificial Respiration by Swinging the Asphyxiated Newly Born.——Die angeblichen Gefahren und die sicheren Vorteile der künstlichen Atmung durch Schwingen des tief scheintoten Kindes. B. S. Schultze (Jena).
79 Dangers of Schultze's Swinging.—Beobachtungen über die Gefahren Schultzescher Schwingungen. G. Burckhard (Würzburg).
80 Ueber Chorea chronica progressiva. (Huntingtonsche Chorea). W. Weyrauch.
81 Fall von Hypertrichosis sacralis. M. Marcuse.
82 Stopper for Ether Flask. (Aetherflaschenverschluss.) H. V. Baeyer.

76. **Action of Mountain Climate on the Blood.**—Bürker's extensive experimental research is described in detail, and the general conclusion deduced that the climate of the mountains certainly has an unmistakable, specific action on the composition of the blood. The reaction to the mountain climate on the part of the blood is not a relative but an absolute modification of it. The experiments were made on rabbits, some from the same litter being kept at Tübingen and others being carried to Schatzalp, at an altitude of 1,864 meters, or nearly 6,000 feet

above the sea. The specific reaction on the part of the blood is evidently at first an accumulation of iron and hemoglobin in the liver and in the blood. This accumulation may be due to the opening up of reserve stores of hemoglobin. By the second or third week the blood-forming organs produce a new supply; the liver gives up its iron and the blood takes the hemoglobin. The liver probably yields about half the iron needed, and the rest comes from the bone marrow. The facts observed suggest that this new formation of hemoglobin which occurs in the rarefied air might be materially promoted by supplying iron to the liver when its stock of iron becomes depleted. Bürker thinks that possibly radioactivity may be one of the factors in this specific reaction of the blood.

77. **Eosinophilia in Ankylostomiasis.**—The blood findings did not always parallel the findings in the feces in the large numbers of miners examined, although occasionally a certain concordance was apparent.

78. **Schultze's Swinging to Resuscitate the Asphyxiated Newborn.**—Schultze here replies to the various criticisms that have been made in regard to his method of resuscitating infants that have been asphyxiated in the uterus and are born before asphyxiation is quite complete. The hemorrhages and lesions induced by this asphyxiation in the uterus have been erroneously attributed by some to the swinging, when in reality they had occurred previous to birth. Comparison with the natural death of an infant during delivery will show that many of the objections to Schultze's method on this ground are baseless. The exact mechanism of the process by which the infants are revived by swinging is set forth in detail, and its superior advantages are reaffirmed by the author of the method after long years of experience.

Wiener klinische Wochenschrift, Vienna.

Last indexed page 587.

83 (Vol. xviii, No. 3, January 19.) *Zur chirurgischen Behandlung des kallösen, penetrierenden Magengeschwürs (gastric ulcer). H. Hinterstoisser.
84 *Die kombinierte Chinin-Iod Behandlung des Lupus erythematosus nach Holländer und eine Erklärung für diese Therapie. M. Oppenheim.
85 *Zur allgemeinen Technik der Nerven-Plastik. H. Spitzy.
86 *Zur Frage der Konstitution der Krebskranken (cancer subjects). A. Fraenkel.
87 (No. 4.) *Vergleichende Betrachtungen über die Hyperemesis und Eklampsie (comparative study). E. Dirmoser.
88 Beitrag zur Pneumokokken-Epityphlitis (Two cases). E. Haim.
89 *Reflected Sunlight in Treatment of Laryngeal Tuberculosis.—Ueber die Behandlung der Kehlkopftuberkulose mit Sonnenlicht nebst einem Vorschlag zur Behandlung derselben mit künstlichem Lichte. J. Sorgo.
90 *Zur intravenösen Sauerstoff-Infusion (of oxygen). A. Neudörfer.
91 Biologic Action of Cholin.—Zur Kenntnis der biologischen Wirksamkeit des Cholins. A. Exner and E. Zdarek.
92 (No. 5.) Ueber den Wert des Pyramidons für die Behandlung des Abdominal-Typhus. C. Hodlmoser.
93 Foreign Bodies in Eye and their Expulsion.—Ueber Wanderung von Fremdkörpern im Auge und Spontanausstossung derselben. B. Gesang.
94 Action of Lecithin after Exposure to Röntgen Rays.—Zur Wirkungsweise des röntgenbestrahlten Lecithins auf den tierischen Organismus. O. E. Schulz.
95 *Die Behandlung des Condyloma acuminatum mittels Erfrierung (refrigeration). M. Schein.

83. **Surgical Treatment of Deep Indurated Ulcer of the Stomach.**—Hinterstoisser considers that gastroenterostomy is entirely inadequate for these cases in which the ulcer has bored deep into the stomach wall and has thrown up a thick wall of cicatricial tissue. They should be treated on the same principles as a malignant growth, by resecting into sound tissue. The Murphy button was used for circular antecolic gastroenterostomy in one of his 3 cases, but it did not answer the purpose. The thickening and hypertrophy of the stomach wall prevented the halves of the button from locking correctly. All the patients were completely cured and have no further stomach disturbances.

84. **Quinin-Iodin Treatment of Erythematous Lupus.**—Oppenheim proclaims that Holländer's method of treating erythematous lupus by quinin internally and iodin externally afforded remarkably fine results in 6 cases in Finger's clinic. Two patients were cured, and the others were very much benefited. He experimented with animals to study the reason for this striking benefit, and came to the conclusion that it is due to impregnation of the organism with the quinin which enhances the action of the local applications of iodin. The iodin attracts the quinin to the point of the lesion, where it exerts its almost specific action. The patients took quinin bisulphate in increasing doses to a maximum of 4 gm. a day, and the patch was brushed with tincture of iodin twice a day, after the scabs had been removed with alcohol and ether. Treatment was kept up for a month or two with occasional pauses. The chemotactic action of the iodin suggests the query whether internal administration of quinin would increase the local absorption of iodin preparations, and whether other cutaneous affections might not be favorably influenced by a similar combined treatment, and, finally, whether a similar behavior might not be anticipated from other drugs that display an affinity for each other like that between quinin and iodin.

85. **Plastic Operations on the Nerves.**—Spitzy experimented on dogs to learn whether it might not be possible to transplant the nerves in a paralyzed region so as to innervate the muscles effectually. His successful results were summarized in THE JOURNAL, Sept. 24, 1904, page 915. The various instruments he has devised to overcome obstacles are here illustrated, and he also describes the technic for the different regions. He is convinced that in many cases this neuroplasty might advantageously supplement other measures.

86. **Constitution of Cancer Subjects.**—Fraenkel expresses surprise that so few cases of cancer are noted in subjects with progressive paralysis. In 1,744 cadavers of subjects with progressive paralysis he found cancer very much less frequent than in a corresponding material of any other nature. Advanced arteriosclerosis, with consecutive changes in the heart, is a constant finding in progressive paralysis and tabes, and arteriosclerosis may even be regarded as an early symptom of these affections. The rarity of cancer in these cases of poor circulation and its frequency in particularly well-nourished persons seem to suggest that cancer thrives on this latter soil. The cachexia is altogether secondary. The superabundant health which seems to be the characteristic of those doomed to cancer is, possibly, one reason why the diagnosis of cancer is not made earlier. The aspect of good health prevents the suspicion of any serious affection during the incipient phases of malignant disease. The fact that mechanical and chemical irritation affords a predisposition to cancer may be due to the excessive segmentation of cells which such irritation induces. Cells thus stimulated acquire in time a senile character and progress to atypical development. This is the result not so much of an excess of vital energy as of the lack of the normal regulating processes. In his autopsies in cases of progressive paralysis he found innumerable factors which might have predisposed to cancer: syphilis, trauma, inflammations, round ulcer, etc. The absence of cancer throughout the series can be explained only by assuming that the early deterioration of the circulatory apparatus entailed changes in the tissues more in the nature of atrophy, with little reacting power. Another reason, he remarks, why cancer affects persons with a circulatory apparatus in good condition is that others do not survive to the cancer age. Cancer occurs most frequently at the points peculiarly exposed to mechanical irritation and to irregular embryonal development, and these are places where the blood vessels are especially numerous and the nutritional processes unusually active. Repair of mechanical injury at these points has a tendency to be excessive. For the same reasons *x*-ray burns are liable to afford a predisposition to local cancer.

87. **Analogies Between Hyperemesis and Eclampsia.**—Dirmoser ascribes both these affections to autointoxication and treats them on this assumption. Remedies to quiet the nervous system are indicated at first, followed by measures to eliminate the toxins causing the trouble—hydrotherapy, saline infusion, venesection and laxatives. Withdrawal of blood has a beneficial action not only on account of the elimination of toxins, but, mechanically, by reducing the blood pressure. The patients should be isolated both in case of hyperemesis and of eclampsia. His clinical experience has confirmed the value of

treatment along these lines, with interruption of the pregnancy as the last resort.

89. Treatment of Laryngeal Tuberculosis with Sunlight or Artificial Light.—Sorgo's favorable experiences with sunlight reflected into the throat as a means of curing laryngeal tuberculosis were reported in these columns on page 666. The unreliability of sunlight for systematic treatment has compelled him to seek for a substitute, and he has become convinced that the application of artificial light is feasible. As the tissues in the larynx are so loose and succulent, and as they have never been accustomed to the action of light, they are affected by even the parallel rays, and he believes that it will not be necessary to focus the rays. This simplifies the technic, as the patient can apply this light treatment himself, without the necessity for complicated apparatus. A current of 60 milliamperes would be ample, he thinks. As yet he has had no opportunities for practical experience with artificial light. He was deterred from the preliminary use of adrenalin by the fear that the mechanical application might detract from the efficacy of the rays. Recent experiences have shown that this fear is unfounded and that adrenalin is a valuable aid in the treatment. Edematous conditions seem to be a contraindication to this light treatment, as the 2 cases of this class in which it was applied were apparently aggravated by it.

90. **Intravenous Administration of Oxygen.**—Neudörfer reports from Gersuny's clinic the revival of an apparently moribund patient by intravenous administration of oxygen. Compression of the air passages by a cystic goiter complicated with bronchitis and lobular pneumonia, caused suffocation, even after tracheotomy. As the attacks of cyanosis and dyspnea recurred oxygen was injected into a vein, according to Gaertner's technic. Each time the patient rallied, recovered consciousness and felt much relieved. There were no further indications of suffocation after the second infusion, but the patient succumbed in a few days to increasing heart weakness and pulmonary edema. The complete change in the aspect of the apparently moribund subject in a few minutes after the intravenous infusion was most striking. Neudörfer remarks in conclusion that the absolute harmlessness of the method was again demonstrated by this experience.

95. **Refrigeration of Condyloma Acuminatum.**—Schein reports excellent results from the application of ethyl chlorid spray in this condition. He has thus treated about 30 patients, and the results were much better than those obtained by any other method in his experience. The surface and base of the condyloma must be well sprayed; no adjuvant is needed. The circulation in the growth is arrested; it becomes cyanotic and later dark red. Its nourishment is disturbed by the resulting thrombus, and it ceases to proliferate and, in time, becomes absorbed. The same treatment might prove beneficial, he suggests, for non-malignant pedunculated tumors.

Janus, Utrecht.

Last indexed XLIII, page 1910.

96 (IX, No. 11.) Willibald Pirckheimer's Gicht (gout). A. D. 1470-1530. W. Ebstein (Göttingen).
97 C. H. Pfaff's Reminiscences.——C. H. Pfaff in Göttingen (1793-94). E. Ebstein.
98 The Spread of Sleeping Sickness. W. J. van Gorkom (The Hague).
99 (No. 12.) Portrait with Spectacles, Painted by Thomas of Modena in 1352.—Zincotypie d'un portrait avec lunettes. J. Albertotti.
99½ Historical Features of the International Congress of Ophthalmology, held at Lucerne September 13-17, 1904.—Partie historique. E. Pergens.
101 (X, No. 1.) *The Worship of Esculapius and Practice of Medicine among the Ancient Greeks.—Der Cult des Asklepios und die damit bedingte Ausübung der ärztlichen Kunst bei dem alten Griechen. V. V. Zaremba. (Commenced in preceding No.)
102 Medical Officials in Norway before 1800.—Physicat de la Ville de Christiania. J. Scharffenberg.
103 History of Vaccination in Dutch East Indies.—Contributions à l'histoire de la vaccination aux Indes orientales néerlandaises. C. L. van der Burg (Utrecht).
104 (No. 2.) *Alimentation des Européens et des travailleurs indigènes aux pays chauds (diet in tropics). C. L. van der Burg.
105 The Medical Faculty at Montpellier in the Middle Ages.—Les maitres de la faculté de médecine de M. au Moyen-age. P. Pansier (Avignon). Commenced in preceding volume and continued.)
106 Les trypanosomes aux Indes néerlandaises (in Dutch East Indies). C. A. Penning. (Commenced in preceding volume and continued. Illustrated.)
107 La lèpre. R. Römer (Sumatra). (Commenced in preceding volume and continued.)

101. Worship of Esculapius in Ancient Greece.—The temples erected in honor of Asklepios, the Greek god of the healing art, were always located in airy, sheltered, healthy places and were the prototypes of the modern sanatorium. They were distinguished from other temples by their simplicity and spaciousness. The temple proper was usually very small, containing merely the statue of Asklepios, sometimes accompanied by his daughter Hygiea. This was surrounded by open colonnades where the suppliants gathered. There was always a sacred spring at the entrance to the temple. As the god was said to have been born in Epidaurus, the temple there was the most extensive of all. The walls are lined with bas reliefs, some still well preserved, portraying the return to health or gratitude for recovery of the flocking pilgrims or of entire cities. The temple contained also statues of the healed persons or of the healed part of the body, statues of the head, hand, foot, breasts, shoulder, hip, etc., classified in groups, which must have given the temple the appearance of a pathologic museum. Other votive offerings, urns, vases, seats, filled some of the rooms and hung from the ceilings, some of them costly gold and silver articles set with jewels. These riches were despoiled by the Roman conquerors and the temple is now an empty ruin. The priests who had charge of these temples acquired a certain insight into the medical sciences in time, and were able to cure many of the applicants. They refused to admit persons with contagious diseases or in an advanced stage of any disease, and it was forbidden to deliver a woman even in the environment of the temple. Aristophanes gives a graphic description of the application of a sick person for relief. He first had to bathe in the sacred spring and then make an offering to the god. Each party had to supply his own wants, as the temple offered nothing but a bed of dried leaves under the colonnade. The priests, as darkness approached, went through a certain ritual to impress the patients with a sense of mystery and of the nearness of the god. The god appeared to them in their dreams, and the priests in the morning displayed great ingenuity in harmonizing the god's supposed directions in the dream with some practical measure. When a patient was cured by autosuggestion on a religious basis this was called "incubation," and great was the rejoicing. To some of the applicants the god never revealed himself, the priests assuring them that they were unworthy of his ministrations. One young Assyrian was turned away on account of gluttony. The priests advised in certain cases gymnastics, riding, hunting and similar sports, in others cheering music, singing, etc., hydrotherapy, including running barefoot in the grass, and numerous hygienic and therapeutic measures. Sheep and dogs were trained to lick the patient's lesions. The veneration and substantial rewards accorded to the priests of Asklepios led other priests to practice medicine also, and these temples gradually fell into disrepute. Hippocrates belonged to the tribe of priests of Asklepios, but emancipated himself and laid the foundations for scientific medicine about 460 B. C.

104. Diet in the Tropics.—Twenty-five years' experience in the tropics has convinced van der Burg that continued subjective observation, made by an intelligent person even without scientific training, is worth more than scientific research when it comes to the question of deciding the most suitable diet for a given place. As a rule, however, Europeans in the tropics had better restrict their diet to easily digested vegetables, with fish, poultry, soups, a few relishes, fruits, refreshing beverages, and light wines. Great attention should be paid to the seasoning of the dishes in order to make them appetizing both to taste and to smell, as the appetite is generally languid. After years of experience a man is usually the best judge of what is best for him to eat. As fats do not keep well in the tropics this may be one reason why they are not relished there.